The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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The New Sound Steamer Pilgrim.

The American river and Sound steamers belong to a type distinctly American, both in hull and engine, and often in boilers they are unique, and, until the advent of torpedo boats, were unapproached even in their speed. The conditions under which they have been developed are not only different from those found in other parts of the world, but have been peculiarly favorable to the rapid attainment of perfection. Steam navigation, in a practical and commercial way, began in our land-locked waters under the auspices of an engineer who was probably the first to give any attention to the best forms for vessels which were to be propelled at high rates of speed. Strictly speaking, we suppose there should be two classes made, the river and the Sound steamer. The latter, exposed occasionally to something of a sea, is much heavier in her hull, has a greater freeboard and more weatherly qualities than those of the river steamer proper, which is never expected to meet a wave more than 2 or 3 feet in hight, and never exposed to a seaway.

In giving a detailed description of the latest and probably best specimen of a Sound steamer ever built, it will be interesting to take up some of the characteristic features of these vessels as a class, and to show what the requirements are and how they have been met. When Fulton, in 1807, built his first steamboat, he was fully aware that speed was an essential feature in steam navigation, and he made a series of experiments, which were both accurate and exhaustive, as to the best form for a vessel to be propelled without sails by a steam engine. The present model is a most peculiar one. It has a perfectly flat floor, comparatively slight draft of water, and extremely fine lines both fore and aft. In many respects these boats resemble a modern racing shell, the chief difference being in the form of the midship section, which is almost rectangular, but has rounded corners. This form was foreshadowed even in Fulton's first boat, the Clermont, which for her day was fine, at least in the way of proportions, being 133 feet long by 18 feet in width, and having a depth of 9 feet. In these boats, speed and stability in smooth water only being aimed at, the question is not a complicated one. The breadth of beam is considerable, although the length of the vessel is so great as to make the lines sharp. It is a remarkable fact, showing the far-sighted character of the early engineers, that even in the days of John Stevens both engines and hull had developed into substantially the form which they have at the present time. In the Phœnix, built by Stevens in 1807, the hollow or "wave-line" bow was introduced, as well as the guard-beam. In 1827 Robert L. Stevens introduced the "hog-frame." These boats, both long and light, are, when buit of wood, exceedingly elastic, and constantly tend to change their form under the unequal loads to which they are constantly subjected. They are, at the same time, driven by extremely powerful engines, and the hull alone would be far too light to hold its shape at a high speed unless some means were provided for stiffening it. The hog-frames which Stevens introduced for this purpose consist of immense timbered trusses on each side of the boat, so disposed as to withstand the internal strains which are set up by the engine and by the varying positions of the load.

Another feature of these boats has often caused much comment among engineers, and that is the "guards." These are usually a continuation or extension of the main deck, and to the full width of the paddle-boxes, gradually tapering fore and aft and at the bow, not extending beyond the hull. These wide projections are supported from the hull by diagonal timbers called "sponsons." This greatly increases the available space upon the main deck, enabling the offices and many of the storage-rooms, &c., to be placed outside the hull, leaving nearly the whole main deck available for freight or passengers, as the case may be. In the Sound steamers the sponsons are planked in in part or entirely, so that the sea may not strike with force beneath the guards. This is not found necessary in the boats running in still water. The width over all is not unfrequently nearly double the breadth of beam. These boats, with their engines almost entirely above the main deck, and in a great many cases with their boilers on the guards outside the hull virtually float "bottom up," the center of gravity being so high that they would, so far as the hull is concerned, float bottom up in a perfectly stable manner. Contrary to the opinion frequently expressed by foreign engineers, these boats are not

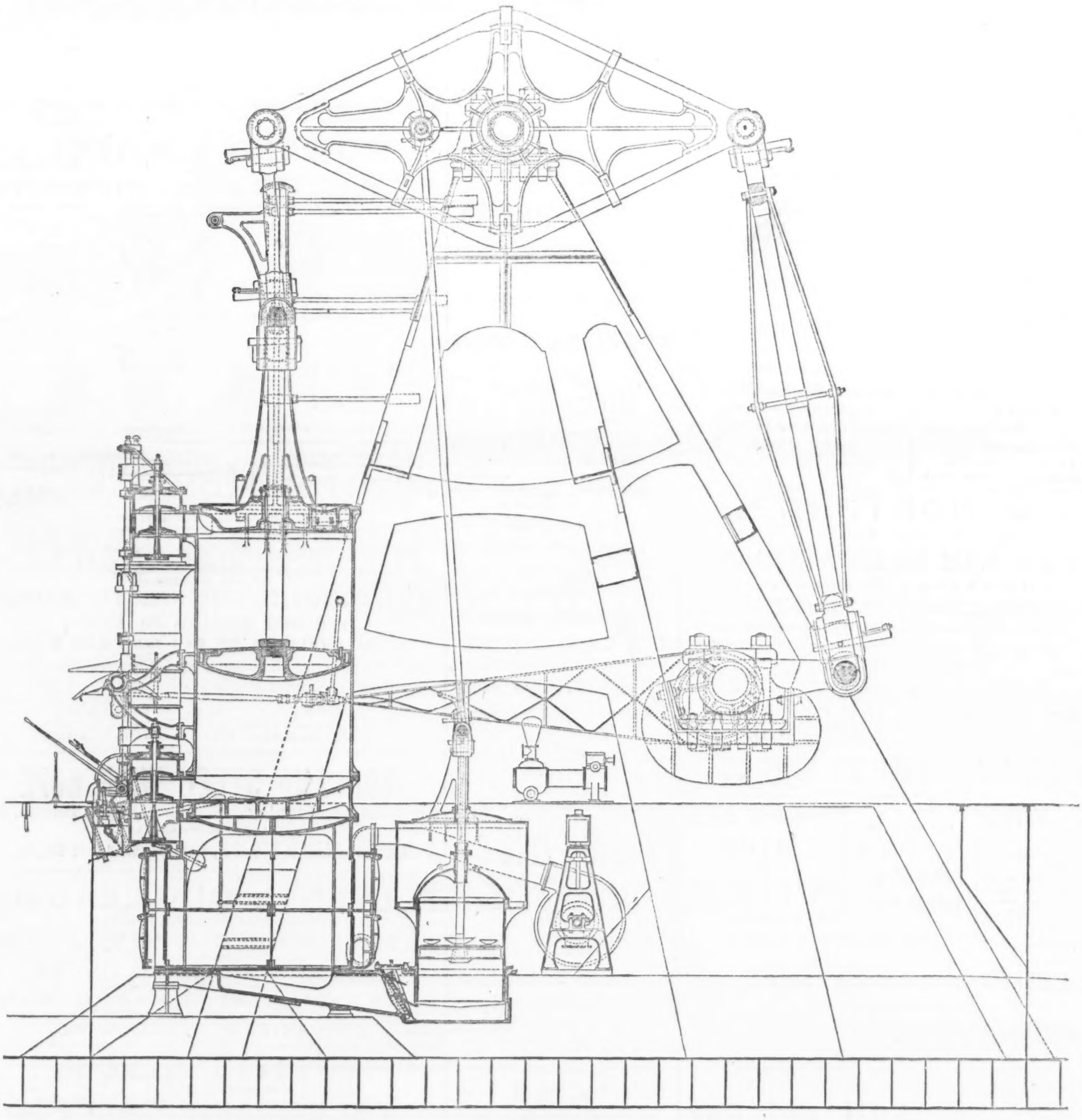
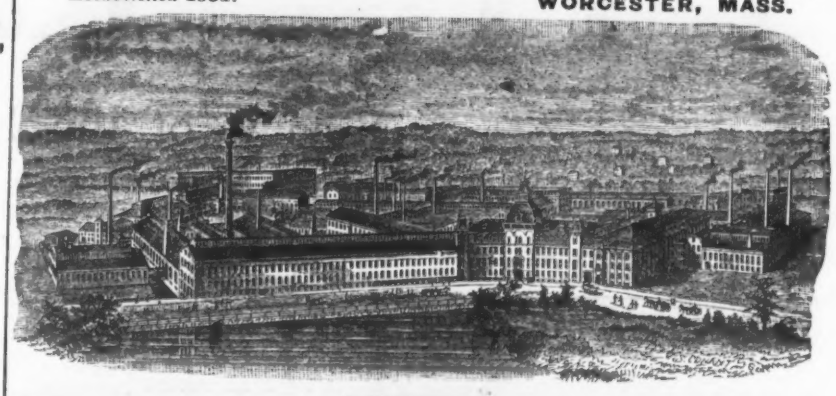


Fig. 1.—Side View and Section.

ENGINE OF THE NEW SOUND STEAMER PILGRIM, NOW UNDER CONSTRUCTION BY JOHN ROACH & SONS, MORGAN IRON WORKS, NEW YORK.



crank, and, what is quite remarkable, the Sound boats are easy in seaway, though not intended for rough water. Shifting of freight, or, more commonly, "chain cable boxes" on the main deck, gives an almost unlimited command of stability so far as the live load, or passengers, is concerned. These chain cable boxes, working as they do out to the exterior edge of the guards, while the passages on the upper decks do not come quite so far, give perfect control over careening.

The beam engine itself is perhaps one of the most curious parts of these vessels, differing, as it does, so radically from anything which has ever been used elsewhere for marine propulsion, and being at first sight so strikingly unsuitable for the work. This form was foreshadowed in those which John Fitch built in 1788, two of his little screw steamers at that time having beam engines.

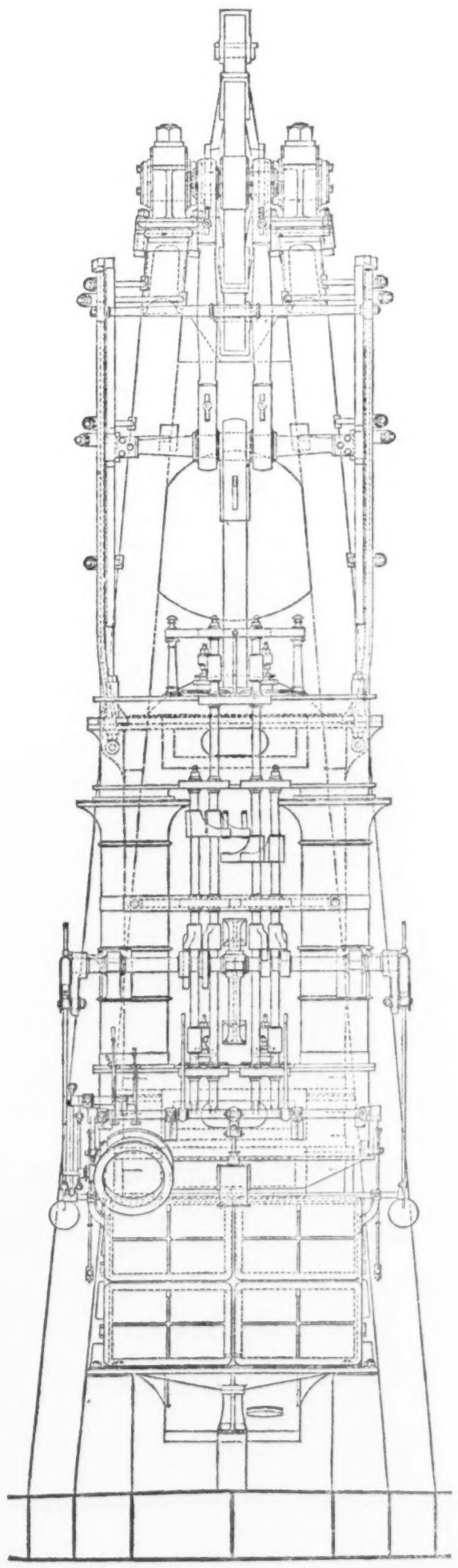


Fig. 2.—End View.

The first vertical beam engine of the modern type for a paddle steamer was built by Robert L. Stevens, for the steamer Hoboken about the year 1822. This vessel, we believe, had the open skeleton beam in its modern form. Two years later, in 1824, he built the Trenton, which was remarkable as being the first steamer in which the boilers were placed upon the guards entirely outside of the hull. This very remarkable feature, though found in many of our river and Sound steamers at the present day, and possessing many advantages for such service, is not altogether characteristic. The North American was built in 1827, was intended for the Hudson river service, and was a typical river steamer in all respects, we believe. The engine was of the type almost universally used, and the vessel demonstrated so conclusively the value of the very peculiar engine, that no improvements affecting the general design have been introduced from that day to this. The speed of this vessel, 16 to 17 miles per hour, was very remarkable for that day.

The features of these engines are an "A" or "gallows frame" supporting the walking-beam, to one end of which the long connecting-rod leading to the crank is coupled, and to the opposite end of which a couple of links are attached, for connection with the cross-head. The cylinder is in a vertical position, and is supplied with steam through double-beat poppet valves. The gallows frame is usually made of considerable hight, consequently the connecting-rod is long, as a long stroke is commonly employed, and angles of the connections are all very small, which greatly reduces the friction, especially on the guides. Until within a few years the A frame itself has been constructed of timber strengthened and stiffened by cross braces and bolts. Probably there is no class of engine ever designed in which the internal friction has been reduced so low, and certainly none has been proposed which could so well withstand the variations in the alignment of the supporting timbers, or, in fact, would work with such ease in an elastic vessel. These engines are said never to wear out. The hull may grow old and the engine be broken up, but as to actually wearing out or getting beyond the point where moderate repairs will put it in good working order, is an unheard of case. Engines are to-day working in New York Harbor, apparently as economically and in as satisfactory a manner as possible, which have worn out one or two hulls, or perhaps more. The long stroke in the larger vessels, ranging from 10 to 14 feet, makes the cranks very long, reduces the pressure upon the bearings, and at the same time makes it possible to use a very considerable piston speed with a comparatively small number of revolutions. One of the boats on the Sound at times reaches a piston speed of 500 feet per minute, and the Bristol and Providence often approach 400 in regular work.

The position of the beam is such that the air-pump can be driven directly through a long link, but at the same time its speed and stroke may be reduced. The high piston

speed, the rapid combustion and the small friction in these engines have made them exceedingly economical. It is probable that until very recently they have worked as economically as the ordinary compound engines. At the present time the best of them probably use 2¼ pounds of coal per horse-power per hour, as against about 1¼ pounds by the best class of compounds. The conditions under which steam is used in these engines are not favorable to economy, for the cut-off can rarely take place earlier than 4-10ths of the stroke, owing to the irregular action upon the paddle-wheel, and the average boiler pressure is from 25 to 30 pounds per square inch. Economy of weight and space is very necessary, and hence the boilers are small and the combustion very rapid. In one case we know where it averaged 39 pounds of coal per square foot of grate surface for a whole season's running. To do this a forced draft is necessary, often amounting to a plus pressure of 1½ or 2 inches of water. The boilers often do not show an evaporative duty of over 7 pounds of water per pound of coal, and yet the economy we have stated is obtained by the engines showing a high rate of efficiency. In 1877 the late Theron Skeel estimated that the Mary Powell's engine produced a horse-power for 22.1 pounds of steam. The new engine for the Pilgrim is intended to carry a higher pressure of steam (50 pounds) than has been heretofore employed upon beam engines. The boilers are to be tested for a limit of 80, so we are informed.

We present in connection with this article an end and side view of the engine now in process of construction by Messrs. John Roach & Sons, at the Morgan Iron Works, this city, for the new steamer Pilgrim, of the Old Colony Steamboat Co. This engine is, in every respect, a typical vertical beam marine engine. It is, we believe, the first time that a detailed drawing of one of these engines has ever been published in anything except such expensive works as those of Weissenborn or in the pocket-manuals, where the pages are so small as to make details unrecognizable. This engine is, without exception, we believe, the largest that has ever been built. It is calculated to develop 6500 horse-power, which is more than has ever been obtained in a single cylinder. The builders say that the engine can work up to 8000 if necessary. Other steamers, indeed, have more power, as, for example, the Servia, whose engines indicate 10,000 horse-power, but this is obtained from no less than six cylinders. The engine of the English iron-clad Monarch is 8600 horse-power, and has two cylinders of 4300 each, which, we think, is the largest amount of power that has ever been developed by one cylinder previously to the building of the present engine. This great size makes the engine somewhat experimental in its character, since it necessitates the use of masses of metal of most unusual size—so large, indeed, that the question of making sound forgings becomes serious. The shafts required for the vessel are the largest ever forged, being 40 feet in length and weighing 40 tons each in the rough. The immense amount of power to be transmitted introduces elements of difficulty at almost every step in the construction. The material used for the forgings is of an especially good quality, clean and carefully selected, and consisting of horseshoes, washers and boiler plate cut small. These are carefully welded up into square bars, which are in turn piled to form the shafts and other heavy masses.

The cylinder is 110 inches in diameter by 14 feet stroke. The shaft is 26 inches in diameter at the journals. The beam alone weighs some 33 tons and is about 29 feet between centers, with a beam center 18 inches in diameter. The piston-rod is 12 inches in diameter. The long connecting-rod weighs finished between 12 and 13 tons. The nuts for holding down the pillow blocks are 12 inches across, and parts which are usually so light as to be lifted by hand are of necessity furnished with rings, in order to hook on to a purchase. There are 12 steel boilers arranged in four batteries. They are of a very peculiar pattern, but are by no means experimental, one at least of the North River towing steamers having had boilers of the same construction at work for some years, and the past season has had them replaced with others of the same pattern. The hull of the vessel is 374 feet long and 40 feet beam. The width over all is 88 feet 6 inches, and the depth of hold 18 feet 6 inches. The draft of water is expected to be 11 feet. This gives a registered measurement of about 3500 tons. The hull itself, as will be seen from the drawing, is built upon the longitudinal and bracket-plate system. The bottom is exceedingly strong, the depth between the skins is 3 feet, but the bracket plates are spaced only 2 feet apart for a great proportion of the length, so that the bottom is one of the strongest yet built.

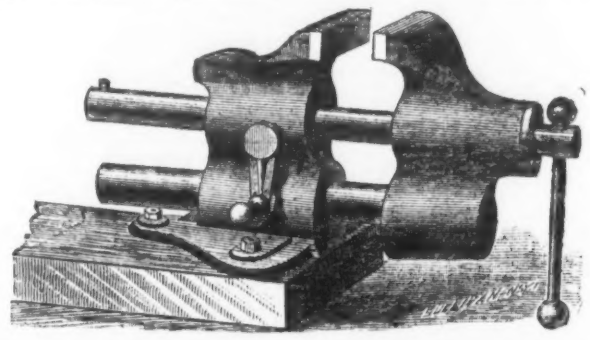
Motive Power Direct from the Mines.

We have already referred to the transmission of motive power from the mines to the centers where it is required, by means of electric wires instead of the transportation of coal as now practiced. Sir Henry Bessemer is credited with making a proposition of this kind with reference to London. He says: "What a magnificent vista of legitimate mercantile enterprise this simple fact opens up to our country. Why should we not at once connect London with one of our nearest coal fields by means of a copper rod of 1 inch in diameter and capable of transmitting 84,000 horse-power to London and thus practically bring up the coal by wire instead of by rail?" Concerning this proposition an English exchange, assuming that each horse-power can be generated by consumption of 3 pounds of coal per hour, and that the engines work six days and a half per week, estimates "that there would be required an annual consumption of coal equal to 1,012,600 tons to produce the result. Now all this would, in the case assumed, be burned at the pit's mouth at a cost of, say, 6 shillings per ton for large and 2 shillings per ton for small coal; that is, at less than one-fourth the cost of coal in London. This would immensely reduce the cost of electric light and of the motive power now used in London for such a vast variety of purposes. At the same time it would save the city from the enormous volumes of smoke and foul gas which this mil-

lion of tons of coal' would make if burned in the city." Following up this train of thought the same authority argues that a 1-inch diameter copper rod would cost about £533 per mile, and if laid to a colliery 120 miles away, the interest at 5 per cent. on its first cost would be less than 1 penny per ton on the coal practically conveyed by it direct into the house consumer. These may appear to be visionary ideas at the present time, but with the rapid advance that is being made in electrical science and in the appliances for utilizing the electric current, there is no saying what will be accomplished in the early future. The realization of such a scheme as this, from the present standpoint, does not seem to be nearly so difficult a matter or so strange a thing as some other propositions appeared when first made and which later became so commonplace as to pass almost unnoticed.

Thomson's Quick Adjusting Vise.

An improved form of quick adjusting parallel bench vise with screw clamp, patented by Mr. John Thomson, No. 9 Spruce street, and built for him by the Colts Patent Fire Arms Mfg. Co., is illustrated in Figs. 1, 2 and 3 of the accompanying engravings. The general appearance of



Thomson's Quick Adjusting Parallel Vise.—Fig. 1.—General Appearance of the Tool.

one style of this vise is shown in Fig. 1, while Fig. 3 presents a longitudinal section through the vise and Fig. 2 an end view. The two jaws *a b* in Fig. 3 are almost exact duplicates of each other, and are connected and guided by two parallel round rods or shafts. The lower rod *d* is forced tightly into the front jaw, but is free to slide through an accurate bearing of ample length formed in the fixed or back jaw. The upper rod *f* is flattened on a portion of its lower side, and is cut with ratchet teeth, engaging in which is a pawl, *h*, housed within the back jaw and retained in the mesh by a spring, indicated in the engraving by *i*. To the pawl shaft two disengaging handles are secured, one on each side of the device, which are clearly shown in the end view, Fig. 2. The forward end of the upper rod is fitted in the front jaw and forms the nut for the clamping screw *e*. The screw is made ¾ of an inch

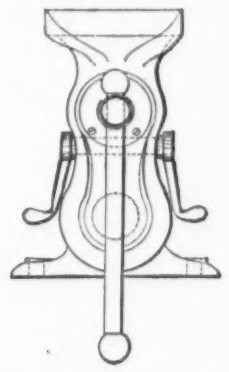


Fig 2.—End View of the Vise, showing the Disengaging Handles.

pitch and square thread. The action of the screw is limited to 1¼ inches by a stop piece, *g*. This prevents subjecting the threads of the screw and nut to a strain when having but a slight bearing, and also prevents the rod from turning with the screw. The arrows stamped on the ratchet rod are for indicating the relative location of the screw in the nut.

The operation of this device is very simple. In clamping and unclamping work of nearly uniform size, say within 1 inch, the device is used as an ordinary screw vise. To make a quick and extreme adjustment, one hand is

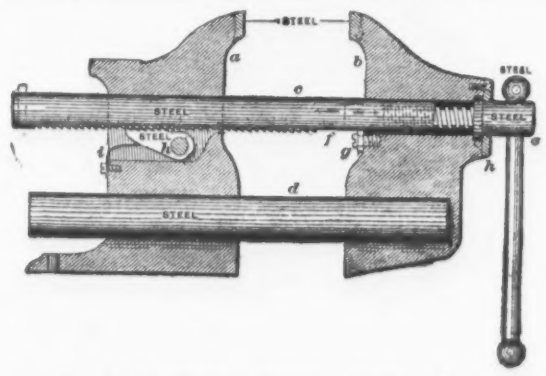


Fig. 3.—Longitudinal Section through the Vise.

placed on the clamping lever and the other hand on either of the disengaging handles. At practically the same instant both hands are drawn forward, which disengages the pawl from the ratchet and permits the withdrawal of the front jaw to the limit of the stop pin. When in this position, the work is inserted against the face of the back jaw, and, with the hand on the clamping lever as before, the front jaw is forced up to meet the work, the ratchet teeth sliding idly past the teeth of the pawl. At this point the action of the hand is changed into a rotative movement with the clamping lever, which instantly secures the work. Some of the advantages claimed for this vise are as follows: All the convenience of a screw vise with instant adjustment for varying sizes of work; the screw being used only on the nip, permits the use of a fine pitch and short hand-lever, and this insures a rapid and firm clamping of the work by the application of moderate pressure. Two disengaging handles being employed, the adjustment of the jaws may be effected with equal facility, from any position that the operator may occupy, with either hand. In material the jaws are of cast iron; the slide shaft, ratchet shaft pawl, pawl shaft, screw and clamping lever, and also the face of the jaws, which are welded to the iron, are of steel. This vise is manufactured as a machine tool, and all the parts are interchangeable. The bearings and working parts are finely finished.

Individuality of Metals.

The *Ironmonger*, in a recent editorial upon this subject, presents some ideas which will be of interest to our readers:

Within the past few years we have heard a great deal of lamentation from Mr. Ruskin and other gentlemen, whose artistic sympathies and fine perceptions of the indefinitely beautiful are somewhat out of accord with the hard facts of this prosaic age, of the decadence of individuality in workmanship. These critics have bewailed the levelling effect of modern manufacturing competition, and have lost no opportunity of assuring us that machinery has not merely vulgarized everything, but has made our mechanics themselves into human machines. With all kinds of things produced by mechanical means the ancient pride of personal production has been wholly eradicated, we are told, and the artisan, who literally forms a portion or the machinery, cares nothing for the outcome of his daily labor so long as he duly receives its pecuniary value. Admitting that these remarks were largely justified a few years ago, we venture to dispute their equal application at the present time. The dead level of machine-made goods has brought about a reaction—in metal work at all events—which has been aided and fostered by the tastes of the fashionable world for the time being. The revival of Queen Anne and Renaissance patterns has had much influence in this respect, but it is probable that other causes have been working in the same direction. Certainly there has been more hand-made metal work turned out lately than for a very long series of years before, and that, too, of a higher class than had been seen in England at any former time. We may not possess any modern rivals of the Quentin Matsys, Albrecht Durers or Peter Vischers of mediæval periods, yet we have undoubtedly a number of skilled workers in metals who possess artistic taste, individuality and technical skill, and who are doing excellent work in a quiet and unostentatious manner. Any one who is conversant with what is going on in the world must be aware of the substantial accuracy of these statements. In *repousée* work for panels and other purposes, the productions of recent years have contained much that is admirable, while those whose energies have been devoted to church decorations have made great headway. In the very ordinary items of house-furnishing, too, the change has been strongly emphasized. Fenders, grates, fire-dogs, kerbs, fire-irons (or rather brasses), and gasfittings have all been revolutionized by the preference accorded to hand-made work. In a similar degree bedsteads have undergone a similar change. Stamped and pierced details have been replaced by the productions of the forger and chaser, and castings have given way for hammered and chiseled designs. In this manner more costly articles have been made to suit the tastes and pockets of wealthy purchasers, and the middle classes have been educated up to the difference as well as the distinction existing between articles produced by the gross from the same mold or pattern and the separate and distinct products of the individual artisan. In France, Belgium and Germany there has always been more individuality in these respects than with ourselves, and those countries are in some particulars ahead of us in handwork. Whether their workmen possess higher taste or more skill in consequence, may be doubted. Here and there their better technical education may give them temporary advantages, but, on the whole, there is no evidence in proof of their superiority. The Belgians may excel in some kinds of candelabra and chandeliers, and the Germans in grills, door-panels and balconies; but their lead is not a long one, and with a continuance of the existing preference for

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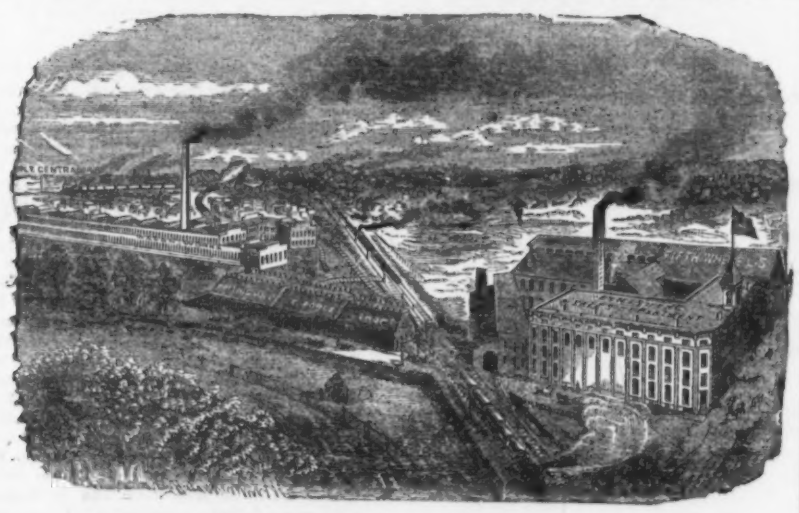

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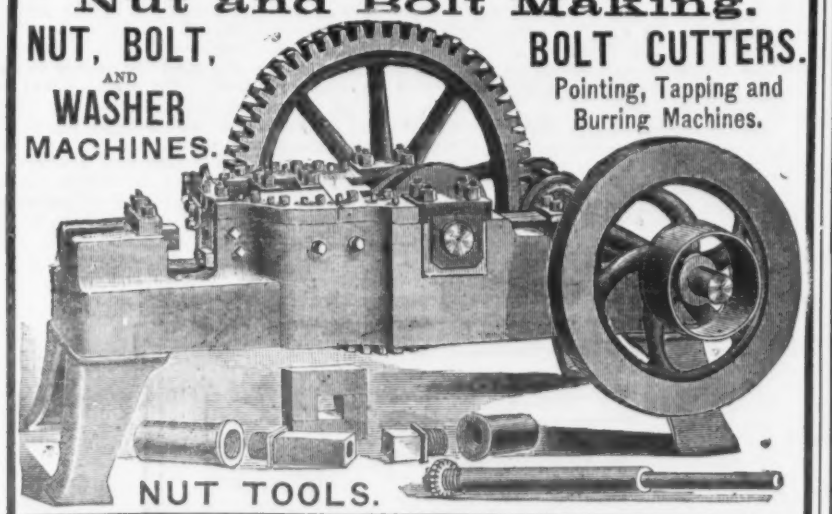

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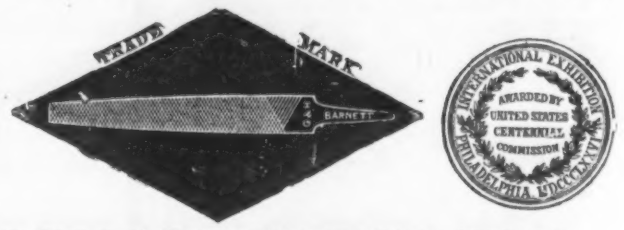

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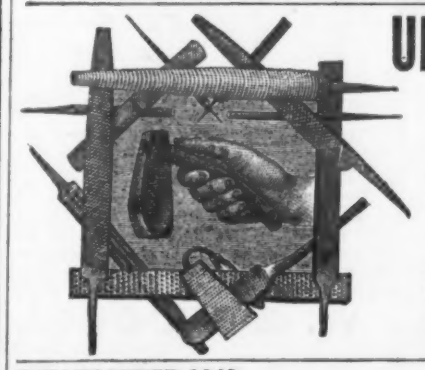

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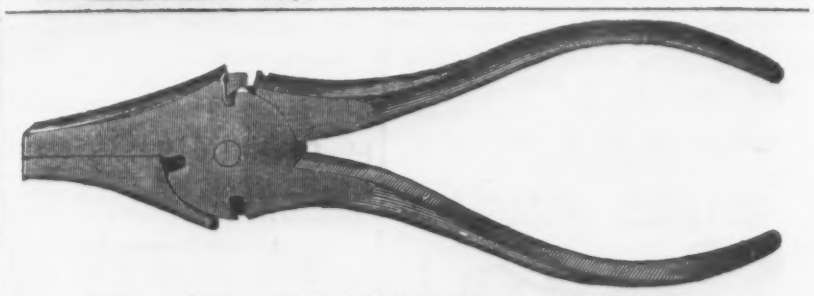

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SCIENTIFIC AND TECHNICAL.

MAGNETIZATION BY HEAT.

Mr. Kepner, of Salzburg, in Tyrol, recently observed that some old bricks affected the magnetic needle, and in order to investigate the cause of this phenomenon he had two bricks made from eight varieties of clay in the neighborhood, one brick in each case being baked. It was found that the unbaked bricks did not affect the needle. Seven out of the eight baked bricks, however, proved polarly magnetic. In further experiments by Messrs. Kell & Trientl, it was found that particles of powder on the magnetic bricks adhered to the steel magnet. Breunerite, mica-slate, argillaceous iron garnet, chlorite and hornblende were, before heating, unmagnetic, but intense heating produced a magnetic polarity, the axis of which seemed to be perpendicular to the plane of stratification.

PRESERVATION OF WOOD.

The increasing cost of wood in this country has led to a great number of experiments in preserving from decay all kinds of wooden structures exposed to the weather. Among the more recent plans suggested is one for impregnating wood with asphalt, combined with some antiseptic material. The finished wood, ready to be put together, is first submitted to heat to drive out the moisture, and is then placed in a hot bath composed chiefly of asphalt and carbolic acid. On cooling, the solvent of the asphalt evaporates, leaving a skin or coating of the asphalt on the surface of the wood that resists water and keeps the antiseptic material securely locked within the pores of the wood. The exterior of the wood presents a smooth, black surface that does not need to be painted.

DUC'S PATENT DISINTEGRATOR.

Heretofore the immense quantities of phosphate rock mined in the neighborhood of Charleston, S. C., have been ground for the purpose of manufacture into fertilizing material by means of the ordinary burr stones—a slow and expensive method. The invention of Mr. H. A. Duc, Jr., of Charleston, S. C., is specially designed to meet the requirements of the artificial manure manufacturers of that neighborhood, and is therefore worthy of notice. The Duc patent disintegrator is purely an "attrition mill"—that is, one in which the material grinds itself, thereby relieving the machine from all excessive wear—a great detriment to most of the mills designed for this class of work, in which the machine itself must take half the wear, and the material to be ground the other half. The material to be ground is broken to about the size of chestnuts, dried, and then fed into the mill from the storage bins, the amount of feed being regulated by means of a variable feed movement, the same as would be necessary for burr stones. The broken rock enters a cast-iron shell, which is revolved at about 150 turns per minute, and is acted upon by centrifugal force, which causes it to form a ring or belt of rock, adhering to the inner surface of the shell and revolving with it. The belt is allowed to accumulate to the thickness of 1½ inches, and is prevented from becoming any thicker by a plow bar—a segmental bar of chilled iron—which extends into the shell, and to within about 1½ inches of its inner periphery. This bar is stationary and of the hardest material, to prevent undue wear of its lower extremity in contact with the revolving ring of rock. To compensate for the unavoidable abrasion, it can be inserted further in as may be found necessary, and in time, when worn out, may be replaced at very small cost in two or three minutes' time. The broken material is fed into the shell, and, falling in front of the plow bar, is prevented by it from turning with the shell, and banks up in a pile, which is kept in a state of rest. Meanwhile the ring or belt of rock before alluded to is passing under this pile, and the two surfaces are subjected to severe attrition, which reduces them to a powder in an exceedingly short space of time. The dust produced by this wearing action of the particles of rock among themselves is removed from the mill by means of a partial vacuum induced by a small rotary exhauster, which sucks the air out of the mill case, by which means the ground rock is floated out of the shell and conducted by a pipe to a settling chamber underneath the floor. Here the velocity of the air current is so greatly reduced that the particles of dust are deposited, and by accumulating, gain weight enough to open a valve in the bottom of the chamber, and run out into a screw conveyor or any proper receptacle. Meanwhile the air, relieved of its load of ground material, although still holding in suspension a certain amount of the finest particles of dust, passes through the exhauster, and thence to a chamber consisting of a frame covered with coarse cloth, technically termed a "dust chamber." This portion of the apparatus may be located in any convenient place, and serves as a settling chamber for the finer particles of dust which were not deposited in the first chamber. To compensate for the air taken out of the shell, a pipe is connected from the dust chamber to the "return air port" of the mill, by means of which a "belt of air," so to speak, is formed, which is continually entering the mill, where it is laden with dust, and upon coming out deposits it in the settling chambers, and again enters the mill on a similar errand. The amount of rock ground with the Duc atomizer in a given time, and by the application of a given power, is said to be much greater than the output of burrstones or other devices used for that purpose, and the degree of fineness much more satisfactory; the ground material is quite uniform in grade, due to the fact that the exhauster maintains a constant amount of vacuum sufficient to draw from the mill only such particles of material as have attained the requisite degree of fineness. The usefulness of this machine is not limited in its adaptation to phosphate rock alone, but it has worked successfully on ores, quartz, marble, soapstone, &c., and, in fact, may be employed for any refractory material which it is necessary to reduce to a powder.

THE HARDENING OF VULCANIZED INDIA RUBBER.

In the opinion of Mr. W. H. Hempel, the hardening of vulcanized india rubber which takes place with piping and other rubber goods after having been in use for a short time, is caused by the gradual evaporation of the solvent liquids contained in the rubber, and introduced during the process of vulcanization. Mr. Hempel has made experiments for a number of years in order to find a method of preserving the india rubber, and he now finds that keeping the articles in an atmosphere saturated with the vapors of the solvent answers the purpose. India rubber stoppers, tubing, &c., which still possess their elasticity are to be kept in vessels containing a dish of petroleum. The use of wooden boxes is objectionable, air-tight vessels alone being sufficient to preserve the india rubber for any length of time. Exposure to light should be avoided as much as possible. Old and hard india rubber may be softened again by subjecting it to the action of vapors of bisulphide of carbon. As soon as the article has become soft it should be removed from the bisulphide of carbon atmosphere, and kept in the above way. Hard stoppers can easily be made fit for use again in this manner, but it is said that the properties of tubing cannot well be restored.

MIXTURE OF GASES BY DIFFUSION.

The fact that gases do not mix very rapidly by diffusion alone may be strikingly illustrated by placing a strip of white paper, moistened with acetate of lead solution, inside a tall glass stoppered cylinder, so that when the latter is inverted the paper extends from the bottom (which now forms the upper end) not more than one-third of the total length of the cylinder. A solution of sulphurretted hydrogen in water is then placed in the hollow stopper of the cylinder, and the stopper is inserted loosely into its place. After about 10 or 15 minutes the production of sulphide of lead on the white paper shows that the sulphuretted hydrogen has risen two-thirds of the hight of the cylinder. Papers moistened with starch, iodide of potassium and chlorine water may respectively replace the lead acetate paper and the sulphurreted hyrdogen water.

METAL ALLOYS.

The *Engineer* says that in a recent work on "Metal Alloys," published in Germany, the author, Mr. Guetlier, gives the following suggestions on the subject of fusing metals: 1. The melting pot should be red hot—a white heat is better—and those metals first placed in it which require the most heat to fuse them. 2. Put the metals in the melting pot in strict order, following exactly the different fusing points from the highest degree of temperature required down to the lowest, in regular sequence, and being especially careful to refrain from adding the next metal until those already in the pot are completely melted. 3. When the metals fused together in the crucible require very different temperatures to melt them, a layer of charcoal should be placed upon them, or if there is much tin in the alloy, a layer of sand should be used. 4. The molten mass should be vigorously stirred with a stick, and, even while pouring it into another vessel, the stirring should not be relaxed. 5. Another hint is to use a little old alloy in making a new one, and the melting pots should be absolutely clean and free from any traces of former operations.

FEEDING APPARATUS FOR STEAM BOILERS.

In supplying feed water to steam boilers, Mr. John Adams, of Watford, England, proposes to employ two feed or supply cisterns, one of which is open and placed above the boiler, and the other closed and adapted to resist considerable pressure. The open vessel is connected with the closed one, and the latter, in turn, with the boiler, by means of pipes, and when communication between the two last is shut off, the closed vessel may be readily filled, as required, from the open vessel. A pipe, issuing from the boiler to be fed, is provided with a three-way valve, or tap, and one of the passages connects the boiler with the closed feed chamber, while another runs from the latter to the open vessel. By means of this arrangement steam may be admitted from the boiler to the closed vessel, and when communication is made between the bottom of the latter and the former, there will be a tendency to establish equilibrium, resulting in the feeding of the boiler. Steam may also be admitted from the closed chamber to the open one for the purpose of heating it before being used.

A GALVANOMETER FOR ELECTRIC LIGHT CURRENTS.

At a recent meeting of the Society of Telegraph Engineers and of Electricians, England, a paper was read on a new galvanometer for measuring the most powerful electric-light currents. The action of the instruments is based on the *nil* method of testing—that is to say, reducing the deflection on the scale to *nil* by means of adjustments. The galvanometer consists of an astatic needle placed within two independent circuits, one a coil of long, fine wire, and the other a coil of short and very thick wire, which, in fact, is a stout hoop of brass in some forms of the apparatus. Through the short, thick coil, the electric-lighting current to be measured is passed, and through the long, fine coil is passed the current from a single-standard Daniell cell. Resistance is included in the latter circuit until the two currents balance each other by differential action on the needle, and the deflection of the latter is reduced to *nil*. Then by means of a constant or multiplier found for the instrument in question by experiment, the strength of the powerful current in ampères can be obtained.

GRAMME CURRENTS IN A VACUUM.

Engineering says that Messrs. Jamin and Maneuvrier have obtained some very interesting effects by passing the alternating current from a Gramme dynamo machine through a voltaic arc formed with carbon pencils in a vacuum. A blue aureole enveloped the two surfaces of the carbon rods, and ultimately filled the glass bulb with light. The carbons reddened and then became of a pale white color throughout their entire length as the incandescence increased. They also volatilized, filling the bulb with carbon dust, which deposited on the inner surface of the glass and finally rendered it opaque. The bulb became filled with a

bluish gas similar to vapor of iodine, which deepened to indigo tint. With bundles of carbon pencils instead of rods the volatilization was far less marked. With rods of copper instead of carbon, the same results were obtained with still greater splendor, the copper being finally deposited on the glass.

KABATH'S ACCUMULATORS.

Mr. Nicholas de Kabath, of Paris, has brought out an accumulator, which is designed to give a very large accumulating surface. It consists of a number of lead plates, connected alternately like the plates of a condenser. Each plate is composed of a set of strips of lead, 1-10th mm. thick. These slips are alternately flat and corrugated, and are placed so as to form a plate 8 or 9 cm. wide, built up of about 100 slips. They are kept together by a perforated lead plate, entirely surrounding them, but permitting a free circulation of the liquid. In forming a cell of the accumulator, Mr. De Kabath puts 12 of these plates into a water-tight wooden case having two terminals, and connects the alternate plates to the terminals. The end plates are plain sheets of lead, thus making 14 in all. The plates are fixed at top to the wooden cover, and rest at the bottom in a bed of black rosin and paraffine. The cells are charged with sulphuric acid, like M. Planté's secondary battery.

RAISING STAMP HEADS.

According to the invention of Mr. S. Jellyman, a Canadian, the raising of stamp-heads will be effected by employing an iron or steel band passing over a pulley, and operated upon by means of a small roller attached to the main shaft. The pulley is hung from the latter by side straps connected by two metal straps with a forked lengthening screw, thus insuring a direct pull from the main shaft upon the operating roller. This roller is mounted on an eccentric shaft which is operated upon by levers, and a catch is employed to hold up the stamp or drop hammer. This catch consists of a bar of metal suspended at one end, and provided with an oblong slot. The bar hangs in a slightly inclined position, and the band to which the stamp or drop-head is attached, passes through the slot above mentioned. Small steel pawls may be fixed in one or both ends of the slot to insure a firmer grip.

CARBONS FOR ELECTRIC LAMPS.

Messrs. James and Lee, of Ravenshead, England, have invented a process and apparatus for the manufacture of carbons for electric lamps in such a manner as to obtain great density and uniformity in their constitution. The carbonaceous material employed is reduced to a fine powder and molded under considerable pressure applied laterally to the cylindrical or other form desired. The press employed is constructed as follows: A strong plate is provided with a number of longitudinal slots, each of the length and width desired for a carbon. In these slots are fitted the lower and upper punches, the faces of which are hollowed each to the profile of the half section of the carbon. Both these punches are attached to heads that are movable in vertical guides subject to hydraulic or other suitable powerful pressure. The upper punches being withdrawn above the plate and the lower punches being drawn somewhat down in the slots, but not out of them, the pulverized material is charged into the slots, and thereupon the lower punches are caused to ascend and the upper punches to descend, squeezing the material between them to the desired form. The upper punches then being withdrawn while the lower punches are caused to ascend, the molded carbons are thrust upward to the top surface of the mold plate, and thereupon a number of quills fitted in holes in the lower punches are pushed upward so as to thrust the molded carbons off the punches. In some cases the carbons are made with fins projecting along each side, and these may either be ground off or retained and serrated for feeding the carbon in the lamp.

The Great Warrior Coal Field of Alabama.

Col. J. B. Killebrew, who recently had occasion to pay an extended visit to the Great Warrior coal field of Alabama, gives an interesting account of his experiences relating to this vast mineral deposit. His opportunities for investigation were excellent, the weather being delightful throughout the whole trip, and the medium stage of water in the streams affording ample facilities for examining and measuring the outcrops of coal to be seen everywhere in the river basins. These streams are numerous, and penetrate every township within the coal area. The principal stream is the Black Warrior, which passes in a southerly or southwesterly direction through the coal field, and from which the latter takes its name. Flowing into this from its eastern side are numerous streams, the principal of which are Locust Fork, Village, Valley and Five Mile creeks; and on the west side the Sipsy, Blackwater, Cane creek, Lost creek, Yellow creek and North river. On all these streams and their tributaries numerous seams of coal appear, while in the wells dug throughout the coal region scarcely a single one but penetrates one or more seams of coal. There are three troughs or basins in the Warrior Coal field, each one resembling in form a long shallow tray, with seams dipping at the edges and ends, but nearly horizontal in the center.

In the first two basins, which may be designated respectively the Birmingham Basin, and the Jasper basin, there are not less, according to Prof. Smith, State Geologist of Alabama, than 2600 feet of coal measures, including between 30 and 35 seams of coal, 5 of which have been extensively mined. Mr. W. A. Gould, an intelligent miner, who has been prospecting in this coal field for 27 years, and whose knowledge of it, perhaps, is more extensive and accurate than that of any other man, he having opened many of the coal mines which are now in successful operation, asserts that he has exposed 42 different seams of coal in the Warrior coal field, and he knows the coal measures there to be over 4000 feet in thickness. This is an extraordinary statement, and shows a wonderful development of the coal measures of the Alabama coal fields as compared with others of the United States. In Pennsylvania, according to Prof. Rogers, the thickness of the coal measures is 2089 feet. In Ohio, according to Prof. Newberry, there are 1455 feet. In West Virginia, 1029 feet; while in Indiana, Prof. Cox makes them 650, while Prof. Worthen, State Geologist of Illinois, makes their thickness for that State about 600 feet. The Missouri basin is but little thicker. Taking the estimate of Prof. Smith, it therefore appears that the coal measures of the Warrior basins have a greater thickness than those of any other field in the United States by over 500 feet, and according to Mr. Gould of 1500 feet. Mr. Killebrew's own observations, though not as extensive, fully justify him in giving credence to the statements made by Prof. Smith and Mr. Gould. The first coal examined by him was the Pratt seam, one of the highest in the series, and which is now extensively mined, fully 1500 tons being taken out daily, 1000 tons of which are converted into coke for use in the blast furnaces in and around Birmingham. The seam can be traced in a westerly and northwesterly direction as far as Democrat, a small town 20 miles distant, where it comes to the surface, and is found dipping to the southeast.

Proceeding northwesterly from the Pratt mine, for a distance of 23 miles from Birmingham, a very large development of coal is found. This seam is a triple one, being 4 feet, and 4½ feet, separated by shale partings of a few inches. This dips toward the southeast, showing the termination of the first basin. Continuing westwardly, coal 3 feet thick is found on Horse Creek in several places. At these points, previous to the war, boats were loaded and floated down the Warrior River to Mobile.

On the western side of Black Warrior a small stream called Frog-Ague comes in from the west and enters the river near Mt. Carmel. On the banks of this stream a magnificent seam of coal 6 feet in thickness crops out for 30 or 40 feet, until it is concealed by the *débris* which has fallen from the overhanging banks. The coal from this seam is very hard and pure, having a large amount of mineral charcoal in its composition, which is an infallible sign of coal high in carbon. Coal was mined and shipped from this place for many years. Below this seam, some 20 or 30 feet, another seam 3 feet in thickness occurs, and 40 feet below this, a third seam, 5 feet thick, occurs in the banks of Cane Creek, and below this again a fourth seam is reported, which is said to be 10 feet thick, though owing to the muddiness and depth of the water Mr. Killebrew was not able to examine it. Its existence is vouched for by highly credible witnesses. It appears, therefore, that in this locality four large seams of coal, measuring in the aggregate over 20 feet, occur, and the quality is said to be equal in every respect to to the best coal from Alabama mines. It is very hard, comparatively free from sulphur, breaking with a smooth fracture, and capable of being transported at any distance. It resembles the Pratt coal in having straight parallel sides in its irregular lamination, in its semi-lustrous appearance, and in having irregular spots of shiny bituminous matter appearing on a lusterless surface. West of the Warrior River the country is generally slightly rolling, sometimes level, but never rugged except in the vicinity of Byler's Ridge, which forms the western boundary of the central basin. All the seams of coal found in the basin of the Warrior lie under the great expanse of rolling or level lands extending westward for 25 miles. East of Jasper several seams appear, varying in thickness from 5 to 8 feet, constituting a sound basis for profitable operations.

In relation to the chemical composition of the coals found in the region of country here described, we present the following analyses from the last report of Prof. E. A. Smith, the State Geologist of Alabama, remarking, however, that these analyses show the quality of the coal at the outcrops, where they have been exposed for an indefinite time to the disintegrating influences of the weather, the only exception being that from the Pratt seam:

	Pratt Seam.	Williams' Bank.	Horse Creek.	Frog-ague.
Specific gravity	1.300	1.312	1.365	1.401
Sulphur	.918	.604	.711	.482
Moisture	1.502	1.525	1.848	3.799
Volatile matter	31.48	26.17	28.36	29.22
Fixed carbon	61.60	66.02	58.21	57.32
Ash	5.416	6.285	11.57	12.67

	Jagger's.	Townley Bank.	Lost Creek.	Pratt Seam in well.
Specific gravity	1.233	1.310	1.310	1.333
Sulphur	.574	.710	.728	.516
Moisture	3.091	3.007	2.261	2.567
Volatile matter	29.04	29.08	33.78	29.78
Fixed carbon	56.53	63.35	57.00	60.60
Ash	11.33	4.50	6.95	6.664

The coals are about the average of the Connelsville coal in composition. The Pratt seam is a hard, good coking coal, semi-lustrous, irregularly laminated, breaks into long, board-like masses across the plane of lamination. The Williams coal is free from shale or slate, especially the lower bench; is hard, does not crumble upon exposure, cakes very little when heated, and probably may be used raw in the furnace. The Horse Creek coal is also a very hard, semi-lustrous coal, more disposed to break in cubical blocks than in board-like forms. Some of the laminæ are very thick, giving small masses the appearance of cannel coal.

The Frog-ague or Mount Carmel Coal very much resembles in physical character that found in the Pratt mines. The coal at Jagger's is very hard, but more bony than that seen at other places; for this reason, probably, it shows less fixed carbon than that of any of the banks, the analyses of which are given above. The coal from Townley bank is very hard, compact and brilliant; will bear any amount of handling, breaks in irregular blocks, and has less ash than any coal which has been found in the coal region. Mr. Killebrew regards it as the most valuable seam which he examined, for quantity, quality, accessibility, and the ease with which it can be mined, cropping out so it may be easily drained, and showing itself for half a mile or more along the margin of a small stream, into which horizontal drifts may be driven and the coal taken out on a level with the surrounding country. The coal on Lost Creek is hard and bright, with sufficient bony coal in its composition to make a fine stock-

ing coal, but not enough to injure it as a fuel. The Pratt seam, found in a well 22 miles distant from where it is worked, resembles very much in chemical composition and physical characteristics the coal now taken out at the Pratt mines.

As far as accessibility is concerned, it may be said that a railroad from Birmingham to Corinth, a distance of 160 miles, would pass, for the greater length, through a region presenting no engineering difficulties. A road from Florence, Alabama, to Tuscaloosa, could be constructed under equally favorable conditions, and either of these roads would unite the coal fields in question with the Iron Mountain of Missouri, with the extensive brown hemetite deposits of middle Tennesee and Western Kentucky, and with the rich stores of magnetic iron ores of Arkansas, and would give an easy outlet to all the coal and coke-consuming regions of the lower Mississippi Valley, and render this Warrior coal field a formidable and successful competitor in the coal trade with the mines of Pennsylvania. Nor need there be dependence altogether on railroad lines. A small amount of money would construct 5 or 6 dams across the Black Warrior, which would serve to pool the water over the shoaly places that now offer the only impediment to the successful navigation of that stream. With such dams coal could be delivered in Mobile at a cost not greater than it takes to deliver coal at Louisville from Pittsburgh, thus supplying, at cheap rates, coal for all the shipping and manufacturing interests of the Gulf, West India Islands and South America.

Iron Ore From Durango, Mexico.

Mr. A. L. McCreath, of Harrisburg, Pa., has made a thorough investigation of the ore obtained from the remarkable iron mountain at Durango, Mexico, lately examined by Mr John Birkinbine, as well as of the pig and bar iron made from it, and obtained the following results, which we take from the *Journal* of the United States Association of Charcoal Iron Workers:

The average of 27 specimens of ore collected from various sections of the 10,000,000 square feet covered by the deposit, and representing the different peculiarities of occurrence, shows a composition of—

Magnetic oxide of iron	2.071
Ferric oxide	77.571
Manganic oxide	.113
Titanic acid	.71
Lime	5.050
Magnesia	.364
Sulphuric acid	.212
Phosphoric acid	3.041
Loss of ignition, water, &c	1.984
Silica	7.760
Alumina, &c., undetermined	1.124
Total	100.000
Metallic iron	55.800
Manganese	.079
Sulphur	.085
Phosphorus	1.328
Phosphorus in 100 parts iron	2.379

These samples embraced specimens from one portion of the mountain where an inferior ore is found, and the results of further analyses of 17 specimens representing an area of 7,000,000 square feet, gave:

Metallic iron	62.775
Phosphorus	.288
Silicious matter, including a little titanic acid	5.240
Phosphorus in 100 parts of iron	.458

To present the richness of the ore, the following comparison with that from other well-known specular mines is given:

	Per cent iron.
Average of seven large Lake Superior mines	63.364
Pilot Knob, Missouri (hard ore)	64.910
Rio Mine, Island of Elba	61.810
Cerro de Mercado, Mexico	63.775

The solid masses of ore which arise from the contour of the mountain in turrets, will exhibit a still larger percentage of metallic iron. There are specimens which will approximate 70 per cent. of iron. The pig iron made with charcoal, and the bar iron puddled with wood as fuel contain:

	Pig Iron.	Bar Iron.
Silicium	.771	.105
Phosphorus	.428	.193

In reference to the iron, Mr. McCreath remarks that the pig iron contains less phosphorus than the average of our mill or forge irons. Although the percentage of phosphorus in the bar iron is considerable, yet it is by no means excessive. Analyses of standard English and American wrought irons show the following:

	No. 1.	No. 2.
Phosphorus	.248	.197

No. 1.—Sir William G. Armstrong's "Ridsdale" iron, coil bar, for gun tube; best iron, four times worked. No. 2.—"Ulster iron," coil bar, for gun tube; extra best iron, four times worked. The small percentage of titanic acid shown by the analysis is not sufficient to materially effect the working of the ore in the blast furnace. In order to develop a portion of this remarkable deposit, the following recommendations were made: A plant of moderate size to be constructed promptly, the works being designed so as to decrease the cost of transportation to a minimum, and produce the special manufactures which would make the investment a paying one at once. At the same time the initial industry should be so planned that much of the material and machinery for their enlargement could be constructed at these works. For the present the erection of a blast furnace, small rolling mill, machine shop, foundry and smithery is advised. The rolling mill should be constructed to make ordinary merchant bar, light mine rails, nail plate, &c., and to have connected with it a few nail machines to make the sizes ordinarily used; and also to be arranged so as to accommodate furnaces for producing crucible steel for mining tool purposes. The machine shop, foundry and smithery should be capable of doing ordinary repair work, to construct new work for mines &c., and to be erected with a special view for the manufacture, as far as practicable, of the fixtures and appliances for future enlargements of the plant. The cost of a work as above described would probably vary from $250,000 to $300,000.

For smelting furnaces, charcoal is the fuel immediately available, while for manufacturing purposes wood or gaseous fuel made from otherwise waste products, could be employed. The annexed table gives an interesting comparison of prices. The column marked "Durango prices" shows the cost in Durango of the various articles specified as given by merchants in that city. The column of "U. S. prices" gives the present quotations for the same specialties in Philadelphia, and the column marked "Duties" gives an approximate equivalent in cents per pound of the tariff placed by the Government of Mexico upon the materials named:

Name of Article.	Durango price per pound.	U. S. price per pound.	Duty per pound.
	Cents.	Cents.	Cents.
Nails	25 to 31	3½	5½
Spikes	25	3½	5½
Horseshoe nails	56	18 to 25	5½
Wagon springs	37	10	5½
Bar iron	13	3¼	2½
Sheet iron	20 to 24	3¼ to 6½	4½
Iron wire	25 to 50	4 to 8	4½
Castings	10 to 13	2½ to 4	1½
Window gratings	18	4 to 5	13
Wood stove, (oval, 12x18x30 in. high)	$55 each.	$10 each.	8 c. pr. lb.

The rapid construction of the various railways will naturally reduce prices from those given above, and it is with this expectation that the establishment of iron works is looked upon so favorably by the Government, the people and those having investments in Mexico. From calculations made as to the cost of producing pig iron and the various manufactures, making large allowances for introducing skilled labor, estimating fuel at full prices, and allowing liberally for interest on investment, the cost of production at Durango should not exceed the United States quotations given in the above table. As the railways reach out and connect the various parts of the Republic, industries will follow, and, independent of the requirements of these great trade avenues, a large demand for manufactures of iron must result. If the 10,000,000 inhabitants of the country do not develop her resources, foreign energy and capital will establish industries, all requiring iron in some form.

The existence of tin ores in the state of Durango, convenient to the Iron Mountain, and some of which are at present being worked on a commercial scale by an American company, gives promise that the manufacture of tin plate may become an industry of magnitude, and the iron to produce these plates be obtained from the iron mountain. The possible extent of such manufacture will be appreciated from the statement that the United States import annually an amount of tin plate requiring the consumption of 150,000 tons of pig iron.

The native labor is good, and the peons, who can be obtained in abundance, are robust and possess unusual powers of endurance. Habit has made them indolent, but good management will overcome this difficulty. The mechanical abilities of the native Mexicans give encouragement to the belief that they will readily grasp the details of iron manufacture. At present peon labor commands only 38 cents per day in Durango, and the low cost of provisions, and the few articles of necessity required, encourage these people to accept this meager compensation with satisfaction.

Coal and Iron Deposits in Italy.

The remarkable lack of coal doposits in Italy renders this kingdom dependent in a great measure, upon foreign supplies, and the importation of fuel from other countries must, therefore, necessarily be large. The deposits of anthracite possessed by the country are neither extensive nor productive, the yield being estimated at about 2000 tons. In 1866 somewhat over 520,000 tons were imported, and since then the gradually increasing consumption has caused the quantity to increase to almost 1,500,000 tons. Iron ore, on the other hand, is found in many districts, and if coal were found in a corresponding degree, Italy would probably not only be independent of other nations, but would be a serious rival in the coal trade. In the absence of fuel for smelting purposes, large quantities of ore are exported, and scarcely 20,000 tons of pig iron are turned out annually. The working of iron ores takes place in the provinces of Lombardy and of Piedmont, in Sardinia, and especially the island of Elba, which latter produces alone more than 32,000 tons, which are almost all exported. Italy possesses 65 iron mines in actual working, which, in the year 1877, produced 237,931 tons of ore, only a small proportion, however, being treated in the country itself. The inexhaustible beds of Montagne iron of the island of Elba, formerly worked by the Etruscans and Romans, and of world-wide fame, are not worked as they should be, especially in the face of the keen competition of the other mines of the basin of the Mediterranean and the Atlantic, such as, for instance, those of Mokta-el-Hadid, near Bona, in Algeria, and Somorrostro and Bilbao, in Spain. The iron mines of the island of Elba have been lately made over to an Italian company, represented by the National Bank of Rome. The royalty to be paid to the Government has been fixed at 5.25 francs per ton of ore extracted. The annexed table gives figures for the period from 1871 to 1876 of the quantities of pig, wrought iron and steel produced in the country, imported and exported, expressed in tons:

CRUDE IRON.

Years.	Production.	Imports.	Exports.
1871	22,000	18,932	1,080
1872	26,000	21,874	3,722
1873	25,480	13,944	2,679
1874	21,054	30,186	868
1875	20,278	21,980	1,013
1876	20,000	22,535	744

ROLLED IRON.

The annual average production is about 49,000 tons:

Years.	Exports.	Imports.
1871	74,422	1,805
1872	67,588	3,792
1873	67,760	4,122
1874	77,380	5,273
1875	88,999	2,629
1876	93,713	1,845

STEEL.

Years.	Production.	Imports.	Exports.
1871	1,400	2,059	208
1872	1,550	3,199	118
1873	1,800	2,762	132
1874	2,000	3,482	258
1875	2,000	3,478	131
1876	2,800	4,853	109

Messrs. Siemens and Halske, of Berlin, Germany, have undertaken to make machines and carriages for the first electrical railway in Holland.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, July 6, 1882.

DAVID WILLIAMS - *Publisher and Proprietor.*
JAMES C. BAYLES - *Editor.*
JOHN S. KING - - *Business Manager.*

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TO THE IRON AGE, VOL. XXIX.

An Index has been prepared to Volume XXIX of *The Iron Age*, January—June, 1882, which will be mailed free on application.

The Labor Situation West.

As we write, the labor situation in the West remains about as it was at the time of our last issue. As was announced in that issue, the finishers—by which is meant the workmen in the rolling and heating department, outside of muck rolling—held a meeting on Monday at Pittsburgh, but, as the Fourth of July has intervened, we have not received any reliable account of the action at this writing, and therefore cannot tell how much importance is to be attached to this meeting. We have no doubt that on the future action of the Amalgamated Association this meeting will exert considerable influence, but we hardly expect that at the present time it will have that effect of ending the strike which some have looked for. It is hardly to be supposed that these men who have gone into the strike will so openly go out of it, and any one who knows the power of even a small minority in a union when once action has been taken, knows that it will take quite a strong majority to be able to stand up against the sneers and opprobrium of the minority in closing a strike.

The most important action of the past week—that of the signing of the scale at Leechburg—was given by telegram in our last issue. This signature, which was at first heralded over the country as a wonderful victory for the Amalgamated Association, turns out to be a veritable boomerang. Kirkpatrick & Co. did sign the scale, but all of the advances demanded by the men were stricken out, except the advance of 50 cents for puddling, and as the original scale demanded included an advance of 50 cents for the use of hot cinder fix, and as this was stricken out, it really made the price of work at the Leechburg mill the same as was paid last year by other mills doing the same class of work. It seems that this action was taken without the officers of the association knowing fully what demands were withdrawn, and after running for a day or two, the mill was stopped to await the decision of Mr. Jarrett on the action of the men. Some of the officers claim that the action was a misunderstanding on the part of the men, but it is difficult to see how this can be, as the points to which Mr. Kirkpatrick objected were stricken out of the agreement in red ink. It is hardly possible that the men signed the scale without knowing what they were signing. They are not children, and will hardly plead the "baby act." It will be interesting to watch the action of the Amalgamated Association in this matter, and see how they will justify a refusal to live up to what they have always claimed was a contract. Mr. Martin, the secretary of the Amalgamated Association, in a letter to the Pittsburgh *Dispatch*, says:

> We are now in possession of a copy of the scale as signed at Leechburg, and upon examining the same find there is much more stricken off than the "50 cents per ton extra for hot cinder fix," which I feel safe in saying will not satisfy the Amalgamated Association until investigated. That firm was given the privilege of striking out "50 cents per ton extra for hot cinder fix," and to allow the knobblers' ton to remain until Mr. Jarrett went there to settle it. But, as above stated, we find that the knobblers' ton is made to read absolutely "2464 pounds;" besides, other things were stricken off which were not mentioned nor considered at the time the hot fix and knobblers' questions were spoken of. So that the Leechburg affair is not "a break," as a few days' time will show.

The Mt. Hickory Iron Co., Limited, of Erie, have issued a circular in which they refuse to grant the advance demanded by the Association, and inform the men that they are determined to make the effort to control and manage their property under such just and equitable rules and prices for labor that men who are not controlled by any association or society will find it to their interest to become employees of that company, and also state that individual contracts will be made with each employee, and that those who are unwilling to continue work must vacate the premises belonging to the company.

It seems that this company last year paid 25 cents less for puddling than Pittsburgh, being probably the only case west of Pittsburgh. The company state that their "experience at their mill proves that after "having paid for the material that enters "into a ton of muck bar, and allowing $5.25 "per ton for puddling, the same could not be "manufactured into the standard sizes of "bar iron and sold at the ruling price of "iron for the past year so as to cover its "cost of production." The circular contains some interesting figures. A portion of it we give below. It is addressed "To the Puddlers, Heaters and Rollers of the Mt. Hickory Iron Co., Limited:

> In May of the present year the association demands a further advance of 50 cents per ton over the price paid in 1881, and the facts show that the standard sizes of iron in 1881 could not be sold at an average of 2½ cents per pound during that year; and yet, at the very time you demanded this last advance of 50 cents per ton, it was impossible to find a market for the product of the mill at the base price of 2½ cents per pound, which price you had already conceded should be received by the mill owners when the price of puddling was $5 per ton, instead of $6, as now demanded. Now, it may be well to see what you were realizing as your proportion of the profits at the time that you made the last demand for increased wages. We find by our last pay-roll that for the two weeks ending on the 27th of May, the following were the daily wages paid at this mill:

	Per day each.
Puddlers averaged	$4.04
Helpers averaged	2.08
Bar mill rollers averaged	5.63
Heaters averaged	4.23
Roughing catchers averaged	2.80
Finishing catchers averaged	2 25
Roughers averaged	2.80
Helpers averaged	2.00
That on the 10-inch mill the	
Rollers averaged	$9.69
Heaters averaged	6.95
Roughers averaged	3.47
Heaters' helpers averaged	2.00
That on the 8-inch mill the	
Rollers averaged	$6.87
Heaters averaged	5.19
Roughers averaged	2.59
And that on the muck mill the	
Rollers averaged	$4.75
Dragouts averaged	2.00
Catchers averaged	2.00
Roughers averaged	2.00
Muck bar weighers averaged	2.70

> The number of hours constituting a day's work at the mill for the puddlers never exceeds 10 hours, and is much oftener eight hours per day; and it is a fair estimate to base the average as not exceeding nine hours per day. According to the pay-roll, puddlers received $4.04 per day of not exceeding nine hours, and if the demand now made by you were conceded, you would receive an advance of 37½ cents per day, making an average of $4.41 per day.
>
> We think that the foregoing statement of prices received by the employees of the mill shows that you were not very hardly oppressed by capital, and that you have received during the past two years an undue proportion of profits, based upon the agreement of 1880, which you at the time conceded to be equitable and fair. There is no question in dispute at this time between this company and you in regard to your demand of an advance of 50 cents per ton for puddling, as under no possible circumstances will your demand be conceded in the present condition of the iron market, and the only question that could possibly arise between us would be whether we could pay you $5 or $5.25 per ton for puddling. The association to which you belong and which controls your actions, independent of any views which you may have of your own, undertakes to regulate and control the question of labor and employment of all the men engaged in the iron mills of the country west of the Allegheny Mountains. They not only fix arbitrarily the prices to be paid by the mill owners to the puddlers, regardless of the fact of some mills having local advantages not possessed by others, or taking into consideration the cost of living and expenses, or the convenience of some localities over others. When this mill was started in May, 1879, its policy was to employ non-union men. This policy was adopted, not because we had any hostility to the Puddlers' Union, but from the fact that the arbitrary rules and regulations of the association of which you are now members virtually made it impracticable for us to successfully carry on our business at this place. We believed that every man had a right to make his own bargain and his own terms, and we could not see wherein the policy was beneficial, either to you or ourselves, that required us to go to Pittsburgh to negotiate with an association having no common interest with us for what we should or should not do in the management and control of our affairs. We attempted to carry out this policy, and at last a compromise was effected with your association, by which it was agreed that members of the association could work in the Mount Hickory Mills at 25 cents per ton for puddling, under the Pittsburgh scale. This concession did not place us on an equivalent with the mills more advantageously located in the cost of material necessary to produce a ton of iron, nor was the concession an equivalent of your savings in the cost of living, house rent, and other incidental expenses and advantages in working here over many other localities.
>
> We have now fully determined that we will make the effort to control and manage our property under such just and equitable rules and prices for labor that men who are not controlled by any association or society will find it to their interest to become employees of this company. We have arrived at this decision regardless of what the price of puddling may be, and we feel that it is nothing more than justice to you to let you know this fact, so that in case you are unwilling to work upon this basis you may look elsewhere for employment. Individual contracts will be made with each employee of the mill. These contracts will be in the hands of the superintendent on Wednesday, July 5th, and the men who desire to continue work in the mill must notify the superintendent, and those who are unwilling to do so must prepare to vacate the premises occupied by them belonging to the company.

The Finance Committee has reported to the Senate a bill to provide for a "better method for adjusting the duty on customs revenue cases." We have several times referred to this bill. It provides that suits for the recovery of duties alleged to have been erroneously or illegally exacted from importers shall be referred to the Court of Claims. It also provides that at the request of appellants cases shall be tried at New York, Philadelphia, Boston or Baltimore, before a court composed of a single judge of the Court of Claims and two assistants, one to be appointed by the Collector of the Port, and the other by the appellant. From the decision of this court there is appeal to the Court of Claims in banc. From the final judgment of the Court of Claims in banc there shall be the same right of appeal by either party as in other cases against the United States. We have no doubt that there should be some change in the method of determining customs cases, but that change should not be in the direction of the one provided for in this bill. No party or class of men has a greater interest in the decision of these disputes on customs claims than the manufacturers and workingmen of this country. But any change that is made in the method of hearing and determining these cases should not be in the direction of shutting these out entirely, as this bill does, but in the direction of getting them a better standing in the courts that shall try these cases. As it is now, they do have an opportunity to be heard before the Treasury Department, and we are very decidedly opposed to any change that shall take away any rights that the manufacturers of this country now have to be heard in regard to the decision of customs claims.

The Foreign Iron Markets.

Since the latter part of the year 1879, when the influence of the revival of American prosperity began to be felt abroad, the foreign iron and steel industries have been generally prosperous, this favorable condition continuing, although in a modified degree, throughout the whole of the year 1881. Activity in railway construction, so distinct a feature in our country at that time, undoubtedly had a prominent part in promoting and encouraging this flourishing condition in many Continental countries—France, Germany and Austria particularly—and while positive information concerning the probability of continued activity in this direction is not available at the present time, various circumstances appear to point to the conclusion that the European iron trade will not present anything strikingly new or startling during the current year. Reviewing the British iron trade at the present time, fluctuation both in prices and demand appears to be the leading feature in the different iron-making districts, reports from one quarter announcing general depression and inactivity, while steady improvements and firmer prices are experienced in another. The condition of trade in Great Britain at the date of latest mail advices is shown by the letter of our English correspondent, elsewhere printed. An event worthy of notice and not without interest, is the production of good basic steel in the South Staffordshire district from comparatively poor material. It is, of course, not to be supposed that the customary excitement attending such enterprises has been lacking in this instance, and there have consequently been a number of wild and speculative statements in regard to it, such as the immediate abolition of puddling, ridiculously low cost of production, &c. It must be admitted that the steel which has been produced gave every satisfaction, but the cost of making it is a subject which has not yet been definitely settled, and which may, perhaps, prove to be an insurmountable obstacle. The various other branches of the British iron trade have not of late exhibited any material change, but the general tone might, perhaps, be somewhat more assuring and satisfactory, than it is at the present time.

The decline in the American demand for foreign iron and steel, though unfavorably affecting all foreign markets, appears to affect particularly the British iron market, compelling the ironmasters to lower their prices, and leading them to more sharply and severely compete with native manufacturers in the supply of the Continental demand. Germany will probably most severely feel the effects of this tendency, on account of the low duty on pig iron, which is only nominally protective, being much too low to prevent the introduction of large supplies of the British product. Other Continental countries will undoubtedly be similarly affected, though not in a corresponding degree, and native manufacturers will suffer greatly under the burden thus imposed. In periods of great depression such low protective duties will be found wholly inadequate to meet existing requirements, and the countries immediately affected will soon recognize the necessity of levying higher duties on foreign products. Little, if any, change is to be reported in the general aspect of the German trade, although there are unmistakable indications of future activity. A rapid development of the trade in coal and iron, which can be conveyed to Italy through the St. Gothard Tunnel, is shortly expected, and the cost of transportation will be much lower than formerly.

The general unsteadiness and downward tendency which has of late been so clearly defined in the Belgian iron trade, appears to have given way to a more healthy feeling, the various descriptions of iron now being steadier than they have been for some time. Pig iron alone is still weak, the various other branches having improved considerably. If the price of steel is not rising, there is nevertheless an abundance of work at the various mills, the activity being strikingly shown at the works of the John Cockerill Company, at Seraing. The imports of iron ores into Belgium in the first four months of this year amounted to 385,671 tons, as compared with 325,653 tons in the corresponding period of 1881. Iron rails were exported from Belgium in the first four months of the year to the extent of 6246 tons, as compared with 7399 tons in the corresponding period of 1881, while plates were exported in the first four months of this year to the extent of 11,936 tons, as compared with 12,005 tons in the corresponding period of 1881. The protective policy of France received a severe shock by a law passed last year, according to which the duties on imports were materially reduced. It is no hard task to form an idea of the probable effect of the new duties on the iron and steel industries of France, the measure carried out inviting competition from all neighboring countries. The new policy will undoubtedly meet with the disapproval of the large iron and steel manufacturers, and will probably receive the approval of the French Government itself only for a short time. At present, however, the iron market is active, pig iron being in special demand. As long as this activity prevails competition need not be feared, but should the demand fall off a disastrous result will probably follow. The position of the Austrian market has remained practically unchanged, with the exception of a slight decrease both in price of and demand for pig iron. A steady feeling, however, is being encouraged by the very active business done in sheets and plates, as well as in architectural shapes. The steel market is firm, this being in a great measure due to the consumption of railway material, and the stimulus imparted to general business by the activity in railway building last year is also probably not without influence in this direction. The stagnation which so long continued in the Swedish iron markets appears to have given way to greater activity, brought about by a decided improvement in the Bessemer and Siemens-Martin steel industries of the country. Numerous orders are also being received from other countries for iron and steel ships, and future prospects are flattering and hopeful. There is little to be said of Russia in this connection, the successful development of the iron trade being apparently restricted by unfavorable circumstances. The abundant deposits of both coal and iron ore, however, will probably, at no very distant period, largely contribute to multiply the existing sources of wealth of that country.

The Surplus Revenue and Customs Duties.

The large surplus revenue of the United States, and the consequent rapid extinction of our interest-bearing debt, has attracted considerable attention, not only in this country, but abroad, to the probable effect of this extinction on our economic legislation. This revenue is mainly derived from two sources—first, from internal revenue; secondly, from tariff. It is evident that in the near future, if the receipts from these sources continue as large as they are, or even approximately as large, some reduction must be brought about in the receipts from one or both of these sources. It is probable the chief reduction will first be made in the internal revenue receipts. They are not only distasteful to a large class of our citizens on what might be termed business grounds, but also on moral grounds to those who believe that the Government should not derive any of its revenue from what they regard as a legalized license of a great wrong. The number is not confined, as some would believe, to fanatics, but it is the honest conviction of thousands and hundreds of thousands of the people. Add to this the feeling in the South against the collection of internal revenue so largely from whisky, and also the feeling that is growing up among the workingmen, and is finding voice every day to the effect that the tax on tobacco is an enormous tax on the poor man's luxury, and it is evident that these taxes must be considerably reduced in the near future, and that their ultimate extinction is not far off.

But it was more especially of the effect of this surplus on a protective tariff that we desire to speak. This is a question that must come early before the Tariff Commission, and is already being discussed. It is a question, also, that our English friends, in their economic journals, are discussing. The London *Statist*, in a recent issue, has the following to say regarding the contingency of the extinction of our debt with our large surplus revenue remaining:

> The most usual effect anticipated politically from the debt redemption is the speedy abolition or modification of the protectionist tariff in the United States. It is obvious that with the extinction of the American debt the alleged necessity for a high tariff, in order to create a considerable surplus revenue available for extinguishing debt, will disappear. According to a sound economic view, we believe that that necessity has disappeared even now; that the tariff and a large surplus revenue are in fact maintained in order to pay off debt at an extravagant rate; and that it would be better to arrange for a more gradual extinction of the debt and a diminution of the taxation of the country. Still, Americans attach great virtue to the rapid extinction of their debt, and they are not content with such a reduction as would be sufficient for all practical purposes. Even from the American point of view, however, the necessity for the tariff and the large surplus revenue must disappear with the actual extinction of the debt itself, which cannot now be very distant; in fact, the redeemable debt will probably be extinguished in the course of the next two, or, at the outside, three years, and there will after that date be no debt available to be redeemed. From the necessity of the case the subsequent repayment of debt must go on more slowly. There is no doubt, then, that in a very few years the people of the United States will have before them, in a way they have not hitherto had before them, the question of maintaining a protectionist tariff. If such a tariff is maintained, in the judgment of all outsiders the only decent excuses for it will be the protectionist ones; that is, the Americans will be asked to maintain a high tariff, not because they want a large surplus revenue, but because they wish to give protection.

In this extract the *Statist* does not take into consideration the fact that a large portion of this surplus revenue is derived from internal revenue receipts, and that the present rate of tariff could remain at least until the entire surplus arising from internal revenue was wiped out by the repeal of these taxes. After this was done, if with our present tariff, or with the tariff that the Commission shall give us and Congress shall adopt, there is a surplus, it does not necessarily follow that the way to reduce that surplus is by reducing the tariff. Indeed, unless free trade were adopted, in many cases the reduction would serve to increase the revenue. This, we think, is a plain proposition. In order to collect duties or to get revenue from the tariff, goods must be brought into the country from abroad. It is argued by English economists that a reduction in the rate of duty would enable them to bring more

goods into this country, and it is easy to see that unless the reduction exceed a certain per cent. which is not fixed, but movable, the revenues would thereby be increased. The tariff argument would be that the way to decrease the receipts from customs revenues would be to increase the duties and keep goods out.

This question will have to be thoroughly discussed and settled by the Tariff Commission in any report that they may make. There is a number of articles from which some revenue is now derived that will be put on the free list, but we do not imagine that any article from which considerable revenue is now derived will be put on this list. Certainly sugar and iron and wool, from which so large a part of the customs' duties are derived, will not be, and the commission will have to decide, if they wish to reduce the revenue, how it shall be done. We imagine that they will hardly decide that a reduction of the duties on these things will reduce the revenue, but, rather, increase it.

The *Statist* virtually acknowledges this further on in the article from which we have quoted above. It says: "The United States "now gets a large revenue by means of "those duties, but it could get a still larger "revenue by means of duties which would "not offend against the principle of free "trade." And after a little further discussion, winds up as follows: "It does not fol- "low, then, that because the completion of "the process of extinguishing the debt of "the United States will raise in an urgent "manner the question of the protectionist "tariff, that that tariff is about to be abol- "ished or modified."

We have repeatedly warned our English friends against basing their calculations for future trade on any material reduction in our rates of duties. The indications are that a strong effort will be made to reduce the duties on some articles, and these may succeed in some instances, but not much reduction need be expected in manufactured articles. The time is far distant when a tariff that can be adopted by this country will cease to be in its general scope a protective tariff.

Opening Corea.

As we have already intimated in these columns, the United States Government is about entering into relations with Corea, diplomatic and mercantile, which will mark the beginning of a new history and open a future which we contemplate with unusual interest. Best of all, the triumph is peaceful, and consequently more glorious than could have been achieved by war. As the pioneer treaty-making power in this process of opening up a strange and extraordinary people from their ancient seclusion, the position of America is a proud one. It was not needful to prosecute an "opium war." On the contrary, the treaty with Corea expressly stipulates that opium traffic is prohibited under heavy penalties. Neither was it necessary, as when Commodore Perry entered Japan, to make a display of naval force. The success is the result of friendly negotiation through and in concurrence with the authorities of Pekin, who apparently consent to the entire future political independence of Corea, heretofore recognized as an integral part of the middle kingdom.

In regard to trade and foreign relations, the United States are placed in the category of the most favored nations. There are understood to be at least three open ports at which the United States may maintain consular agents, as well as at the capital, and it is stipulated that the Corean authorities shall afford American citizens "every facility for carrying on their lawful occupations." American vessels in distress may find a refuge in any harbor and receive every possible assistance from the local authorities, both vessel and cargo being under official protection

In respect to trade, the fifth article of the treaty is as follows:

Corean merchants and their ships, visiting America for purposes of trade, shall pay all duties, tonnage dues and other expenses whatsoever on the scale of the United States customs tariff, Corea being treated as the most favored nation, and no differential tariff being imposed against her. American merchants and their ships visiting Corea shall pay the duties imposed by Corea, which country shall retain absolutely the right of assessment. The import and export duties, custom houses, prevention of smuggling, &c., shall all be controlled in conformity with regulations framed by the Corean Government, the same being duly communicated to the American officials, who will see, meanwhile, that their countrymen comply with the terms of a brief tariff, concluded and agreed upon, as follows:

1. Import duties on necessaries of life shall not exceed 11 per cent., and on luxuries, such as foreign liquors, tobacco, clocks, &c., 30 per cent., both ad valorem.

2. The export duty on dochitsuro (a kind of betel) shall not exceed 5 per cent. ad valorem.

3. All foreign goods which have paid all import dues and charges shall not be subject to further imposts, whether in transit or in port.

4. American ships visiting Corean open ports shall pay five silver sen per ton of tonnage.

Americans shall be permitted to deal in any of the natural products of Corea, in manufactures and other non-prohibited merchandise, but shall not be allowed to sell in the interior any kind of foreign goods, nor be permitted to travel in the interior for mercantile purposes. The export of ginseng is absolutely forbidden under Corean law, and special regulations will be inforced to prevent the surreptitious introduction of warlike weapons or ammunition. The Chinese or English language will be employed in all official communications. The ports opened are Jensen, Fusan and Renshaw. Although details are lacking to show the exact stage reached in the negotiations as concerns the final approval and confirmation of the treaty with the Kingdom of Corea, we are left to infer that the recent visits of distinguished Americans to Pekin and Corea, notably Commodore Shufeldt and General Grant, have not been wholly informal, unofficial and fruitless. At the same time, the action of Congress in respect to Chinese immigration appears to have been peculiarly inopportune, and liable to prejudice American interests among the Asiatic powers. At last accounts Commodore Shufeldt was at Renshaw. Respecting French operations at Anam, the entire proceedings are said to have been repudiated by the home government.

Knit Goods and Hoop Iron.

Our position regarding the bill which has just passed the House looking to a correction of the duties on knit goods, is in no doubt. We believe it is one of those cases that, commission or no commission, demands immediate relief from Congress, and we are heartily in sympathy with the efforts of those who are trying to secure this relief by the present bill. But there is another bill that is equally meritorious, and should receive equally prompt attention from Congress. That is the bill to correct the duty on hoop iron. Indeed, we question if in some particulars the Hoop Iron bill is not a more meritorious bill, and one demanding prompter action, than even the Knit Goods bill. It was the first bill passed upon by the present Committee on Ways and Means, and passed on favorably. The hoop iron industry is not only threatened with extinction unless this action is taken, but for years it has been suffering. Thousands and thousands of tons of hoop irons, valued at millions of dollars and representing millions of dollars in material and wages, all of which should have been produced and paid out in this country, have been purchased in England, and English workmen and English miners and English manufacturers have reaped the benefit. This has resulted in the taking from our manufacturers and workmen and miners all these millions of dollars. It has compelled mills that had been fitted up especially to make hoop iron to drop this branch of trade and go into other branches of the business, to the injury and detriment of those mills that had been fitted for this other work especially, and of the workmen engaged in this business. It has taken iron from these mills that should have been theirs. It has taken work from workmen that they were fairly entitled to if the law had been properly carried out, and all of this as a result of what Secretary Sherman so aptly termed "a legislative inadvertency." But such an inadvertency is all that can be claimed for the Knit Goods bill, for it is a fact that has lately come out that the suit against the Government which has recently been decided and which has caused the Secretary of the Treasury to issue the decision regarding knit goods, was entered before the revisers of the statutes began their work.

The present condition of things is not, strictly speaking, the result of an omission on the part of the revisers, but is a legislative inadvertence in the original bills. We would have been pleased to have seen the McKinley bill passed as a whole, but failing this, we certainly hope that the present Congress will not adjourn without perfecting these two measures regarding knit goods and hoop iron.

An Appeal to the Charitable.

We are not in the habit of calling attention to appeals to the charitable and benevolent, but an appeal has lately come to our notice of such a character that, in the interest of humanity, we desire to lay it before our readers and give them an opportunity to contribute their mites toward the same. The appeal, which is most touching in its pathos and saddening in the story which it tells, is that of the miners of western Pennsylvania. It says in substance that the strikers in the coal mines have held out for twelve weeks for four cents a bushel for mining coal, but that they are now out of money. That the strikers, by going into camps, can continue this heroic struggle in which they have been engaged on the funds which the association furnishes, but that their wives and children who remain at home must suffer from actual want unless furnished aid from some other source. We therefore appeal to a benevolent and generous public to contribute something toward the support of these women and little ones, in order that they may live while the men who, rather than "basely break their word to "their fellow miners, have left their homes "without bread to go into summer camps by "the river banks." We have no doubt that our readers will thank us for thus calling their attention to this opportunity to show their benevolence. As the Pittsburgh *Leader* says:

There will, of course, be some to cavil and sneer. Men will be heard to say that they find it hard enough to support their own families, without supporting the families of other men who can earn from three to five dollars a day whenever they choose to go to work. Others again will pretend to see nothing very "heroic" about the determination of men to go into camp during the oppressive summer weather along the banks of the lazy Chartiers, and have a good time swimming and fishing, and living on the funds of an association, while their wives and children are supported, as best they may be, by outside contributions. These grumblers will remark that they wish they could get somebody to take care of their families while they go and camp out and have some fun with the boys. But aside from such fellows as these, who wouldn't give anything anyhow and only make these spiteful remarks to cloak their stinginess, the general public will doubtless do its duty in response to Secretary Jones' beautiful appeal.

Seriously, is not this appeal the hight of absurdity, and is it not downright impertinence thus to ask the sympathy of the benevolent? It is certainly a strange application of the "heroic" for men to leave their families to suffer and to the charge of others while they go fishing. There is a story current at Pittsburgh of a man who was a member of the Amalgamated Association and who went to work at Laufman's mill, to the effect that he stated he had taken two obligations in his life; the first was to his wife and the second to the Amalgamated Association, but he regarded the first as much more binding and much more solemn, and he purposed to keep that one rather than the latter, and went to work. Such appeals as this of Secretary Jones disgust sensible men with human nature, especially with coal miners' human nature.

The Position of the Finishers.

We are still (Wednesday morning), without definite information regarding the action of the finishers' meeting at Pittsburgh last Monday. The meeting was in the nature of a mass convention, rather than a delegate meeting. The secretary of the meeting gives the following resolutions as having been passed:

Resolved, That we, the finishing men, deny the charges made against us; that the meeting to-day has been called for the purpose of withdrawing from the Amalgamated Association of Iron and Steel Workers, as we believe that the advance asked is fair and just, and we intend to stand by it until it is granted.

Also that another resolution had passed as follows:

Resolved, By the finishers in convention assembled, that we indorse the action of our president, John Jarrett, and place all confidence in his honesty and ability, and would respectfully ask that he allow his name to be presented to the convention, to which we guarantee our undivided support.

The first may mean a good deal, or it may be mere "buncombe." This can only be determined by the future. Even if the majority of the convention favored an early conclusion of the strike, they would hardly have voted openly for it. While the second is a strong indorsement of President Jarrett, it would mean more if it came from a puddlers' convention. It has not been among the finishers that the opposition to Mr. Jarrett has been found. It is also stated that a plan looking to a more equitable representation of the finishers in the councils of the association was perfected, though the nature of this plan was not given out. Indeed, it is asserted that those present hardly knew what they wanted. There also seem to be conflicting accounts as to the unanimity of the action. One account is to the effect that the meeting was not as harmonious as it might have been and that there is just as much dissatisfaction among the finishers as ever, and one statement is to the effect that the convention increased the dissatisfaction. On the other hand, it is asserted that the convention was entirely harmonious and that all dissatisfaction is ended. In the absence of definite information our readers may take their own choice. One thing is evident—the meeting was not calledfor the sport of the thing. It was an unusual meeting, and it meant something, but just what has not yet appeared.

Some Abuses in the Management of Industrial Exhibitions.

As the season of annual fairs and industrial exhibitions is drawing near, we have a word to say to the gentlemen who will manage these enterprises.

Primarily, we would advise them to keep their announcements within the bounds of truth. A large proportion of exhibitors are attracted by misrepresentations and promises which have no chance of being fulfilled. There is, or ought to be, a sufficient business basis for fairs and exhibitions to account for the fact that they are held. Where no such basis exists, no extravagance of announcement or proclamation will make them great or important. If the managing committees of second or third-rate exhibitions will devote their energies to making them legitimately attractive and instructive, they will have no need to indulge in false promises or to issue prospectuses which they know cannot be made good, and which bring personal dishonor to all who assume responsibility for them. The upright business man should be as unwilling to append his name to a printed as to a written lie, and be at least as careful of his personal honor as of his business reputation.

We would also condemn the practice of withholding, for any cause, rewards and premiums publicly offered and competed for in good faith. We have known of many instances in which exhibitors who have gone to much trouble and expense to compete for promised honors, have been defrauded of their just rights by the combined influence of unsuccessful competitors who have secured the withdrawal of offers after the judges had officially decided the competition. This has happened at least twice at the Cincinnati Exhibition, and we should not be surprised to learn that the company had been made defendants in one or more suits to recover premiums offered and fairly won, but for some reason not awarded. The same thing has happened in a great many other exhibitions. Competitors for offered rewards who were unsuccessful in competition, have still been strong enough to prevent the awards being made, and to accomplish this the bitterest competitors have become allies, and pooled their influence to withhold from "outsiders" honors justly due them. There can be no justice in the withdrawal of a reward which has been competed for, unless by the unanimous consent of competitors. If one refuses assent, that one is wronged beyond explanation or apology. He is also defrauded of the money and time which it has cost him to become an exhibitor.

Our third suggestion is: select judges who will not feel the weight of local influence and who are beyond the temptation to unduly favor friends. We know of very few exhibitions in which honors have not been prostituted to a greater or less extent by their bestowal upon exhibitors whose only claim to them was based on local influence or personal weight in the management. The only honorable course for exhibitors who are also stockholders or directors or managers, is to declare their exhibits outside the competition for prizes. Exhibitors who come from distant points are at least entitled to a fair chance. When this is not accorded them they soon learn to distrust the most tempting prospectuses and to look upon industrial exhibitions as expedients to benefit a ring at the expense of all who can be inveigled into becoming exhibitors. Our whole fair system is in danger of falling into discredit for this reason, and the managers of honest exhibitions who are seeking to establish them permanently for the benefit of trade and the honor and progress of their respective cities, cannot do better than to guard against the abuses we have pointed out, which can be prevented only by the unceasing vigilance of honorable and disinterested managers.

Mining at Bilbao.

As we presume the question of duties on ore will be brought prominently before the Tariff Commission, probably by the Southern owners of iron ore lands, we would suggest that the paper on the iron ore district of Bilbao, Spain, read before the Iron and Steel Institute at its May meeting of 1882, would be very valuable as showing the cost of raising ore abroad.

The statement about labor is especially interesting, and we copy it:

The number of men employed in raising and loading is about 7000. Of these the majority come from Castile, Aragon and the outside provinces. The wages earned by good drillers average 14 reales (2/11) per day during the greater part of the year; increasing to 3/4 and 3/9 during the harvest season, when quarry labor is scarce. Ordinary laborers receive 2/1 to 2/3 a day, and women and boys 1/3 to 1/8. The working hours vary greatly according to the season of the year. In the summer months they extend from dawn till dusk, with intervals of two hours at midday, and half an hour each in the morning and afternoon. These hours should, in the interest of masters and men, be shortened; but there is a strong prejudice in their favor. The sanitary condition of the mining district is unsatisfactory. The men are ill-fed, ill-clad and overcrowded in filthy hovels; and they are, by the nature of things, prone to disease. Small pox and typhoid, therefore, are never wholly absent from the mines. To combat this evil, an hospital and sick fund have been established by a general subscription of owners of mines and railways, to which the men also contribute to the extent of 2 per cent. of their wages. The hospital has now been for one year in successful operation, and a notable improvement has been made in the cure of disease. It would be better, however, if the authorities were to look to its prevention, by the enforcement of efficient sanitary measures.

These wages are not one-third those earned in the ore districts of the United States. The statement of the condition of the workmen, their hours of labor, &c., shows at what cost the English ironmasters procure their cheap ore. And if it is at such a cost as this that the iron works of England are able to produce cheap pig iron and, consequently, to produce cheap steel rails, the world had better pay higher prices for its iron and rails rather than have them produced under such conditions.

The Treasury Department on June 9 issued a circular addressed to supervising and local inspectors of steam vessels, boiler makers and others, suspending the operation of the formulas for the construction of boiler flues less than 16 inches in diameter, which were promulgated by the department circular, No. 30, issued March 14th of this year. The object of this suspension is to permit the objections of boiler makers to the formulas as originally laid down, to be presented to the Board of Supervising Inspectors for consideration at its next meeting. From representations made by the leading boiler makers in the West, it appears that the formulas in question are, in many respects, impracticable. These views, we understand, are endorsed by the Supervising Inspector-General, which leads to this action upon the part of the Government.

The subject of the size of freight cars is a very important one and has been attracting much attention for the last few years. Twenty-ton cars are no longer a novelty on railroads, and 30-ton cars are seriously considered by most of the leading roads. Some of the advantages of these larger cars over the small ones may be seen from the fact that while 1000 tons of freight in 10-ton cars will take up 3100 feet of length in a train, the same weight in 30 ton cars would take up only 1440 feet. The weight of the cars themselves would be reduced from 1000 tons to 412 tons. In reply to the circulars on this subject which the Master Car Builders' Committee sent out, a great variety of replies were received. In considering these the committee came to the conclusion that freight can be carried in 30-ton cars with as much safety and greater economy than with the ordinary 10 or 20 ton car. If any road wishes to test these large cars it recommends them to increase the weight of the wheels to 575 pounds, and to either use the Master Car Builders' standard axle or else one of larger size. With steel axles or journals somewhat increased in size over those of the Master Car Builders' standards, we see no reason why 30-ton cars cannot be run successfully on eight wheels. Until, however, the fitting of the axles and boxes is better than that now employed, the lubrication improved and the car journal boxes made dust-tight, we do not see how it will be possible to use iron axles of ordinary size under 30-ton cars without an enormous increase in the number of hot boxes and accidents occurring from that cause.

The bituminous coal miners in almost all sections of the country, have caught the strike fever, and one region after another is coming out for an advance in wages. At Pittsburgh, as is well known, the railroad coal miners have been out on a strike for thirteen weeks. In the Cumberland region the strike has lasted for some months. The operators are introducing foreign labor and refuse to compromise with the men. The officers of the Knights of Labor, who are engineering the strike, have issued a circular letter offering to arbitrate. The Clearfield region went out on a strike last week. Both Cumberland and Clearfield supply the same market in the East. In Maryland 65 cents was the rate paid before the strike, while the Clearfield miners had 50 cents, and the Clearfield miners have now struck for advanced rates. On last Saturday, the miners of the Meyersdale and Elk Garden regions, near Cumberland, struck for an advance from 50 to 65 cents. Altogether this seems to be a memorable year for strikes.

According to Pittsburgh reports, there has been a slight improvement in the condition of the water supply within the past few days, and the danger of a famine, so threatening but a short time since, has consequently assumed a less serious aspect. The situation is, however, still critical, since any accident which might possibly occur in connection with the Negley River engines would cut off the present limited supply. An increased depth of water is reported in several of the reservoirs, and Engine No. 2 is still at work with one plunger, while Engine No. 1 is operating two plungers. The latter engine is, however, running very slowly, five revolutions per minute being as high a rate of speed as the engineer in charge considers safe. The lower part of the city is said to be moderately well supplied with water, though the upper stories of some of the larger buildings are still without any. It is, however, anticipated that this difficulty will be overcome as soon as a greater depth of water is attained in the reservoirs.

"In regard to those mills which have so "far signed the scale, we wish to say that "they are all paying the $6 for puddling, "and will continue to do so until Pittsburgh "settles, and all rumors to the contrary are "absolutely false." The above is from the Amalgamated Association column in the *Labor Tribune*. If it means that all mills that have signed the scale have signed for $6 puddling, it is correct, and we have never seen any statement that indicated anything different. But if it means that all who have signed the scale are running their puddling furnaces and are paying $6, it is not correct, for several of the mills that have signed the scale are not running their puddling furnaces at all.

We call attention to the notice elsewhere printed among the publisher's announcements, stating that the index for the volume of *The Iron Age* ended with June is now ready and will be sent on application. As those who do not preserve files for binding have no use for the index, it is not deemed best to send it out with our entire edition.

WASHINGTON NOTES.

(*From Our Own Correspondent.*)

WASHINGTON, D. C., July 5, 1882.

LABOR STRIKES.

The action of the Senate Committee on Education and Labor on the proposition of Mr. Morgan, of Alabama, to appoint a commission to take the subject of labor strikes in the United States into consideration, has been anticipated in this correspondence. The following is the text of the substitute reported from the committee: "That the Committee on Education and Labor is hereby authorized and directed to take into consideration the subject of the relations between labor and capital, the wages and hours of labor, the condition of the laboring classes in the United States, and their relative condition and wages as compared with similar classes abroad; also, the subject of labor strikes, and to inquire into the causes thereof and the agencies producing the same, and to report what legislation should be adopted to modify or remove such causes and to provide against their continuance or recurrence, as well as any other legislation calculated to promote harmonious relations between capitalists and laborers and the interests of both, by the improvement of the condition of the industrial classes of the United States.

"2. Said committee shall have leave to sit in vacation, and by sub committees to visit such places in the United States as they may deem proper to obtain necessary information under these resolutions; and said committee or sub-committees shall have power to send for persons and papers, to administer oaths,

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WRIT OF INJUNCTION.

CIRCUIT COURT OF THE UNITED STATES.

SOUTHERN DISTRICT OF NEW YORK.

THE NEW YORK BELTING AND PACKING COMPANY
vs.
EBENEZER SMITH and MATTHEW GATES. } *In Equity.*

THE PRESIDENT OF THE UNITED STATES.

To the Defendants Ebenezer Smith and Matthew Gates and each of them, their clerks, attorneys, agents, servants, and workmen, GREETING:

WHEREAS, It has been represented to us in our Circuit Court of the United States for the Second Circuit and Southern District of New York that Letters Patent of the United States were, on the 26th day of January, 1869, *issued* in due form of law, to the complainant as assignee of Dennis C. Gately for "Improved Vulcanized Rubber Packing;" said Letters Patent being known and distinguished as No. 86,296, and that you, the said *defendants*, have infringed the rights secured by the aforesaid Letters Patent by manufacturing, making, using and selling to others Vulcanized Rubber Packing substantially as described in the Letters Patent aforesaid, contrary to the form of statute in such case made and provided,

Now, THEREFORE, we do strictly COMMAND and Enjoin you the said Ebenezer Smith and Matthew Gates and each of you, your clerks, attorneys, agents, servants, and workmen, under the pains and penalties which may fall upon you and each of you, in case of disobedience, that you forthwith desist from making, manufacturing, using or selling, in violation of said Letters Patent, any Vulcanized Rubber Packing involving or embracing or manufactured in pursuance of or containing the invention described and claimed in Letters Patent of the United States No. 86,296, viz.: the combination with the packing such as therein specified of an elastic backing or cushion of vulcanized India-rubber substantially as described and claimed in the said letters patent, *until further order in this cause.*

WITNESS the Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, at the City of New York, on the 2d day of June, A.D. 1882.

TURNER, LEE & McCLURE,
Complainant's Solicitors.

L. S.

JOSEPH M. DEUEL,
Clerk.

We have instructed our counsel to commence suit against all parties who may infringe this Patent.

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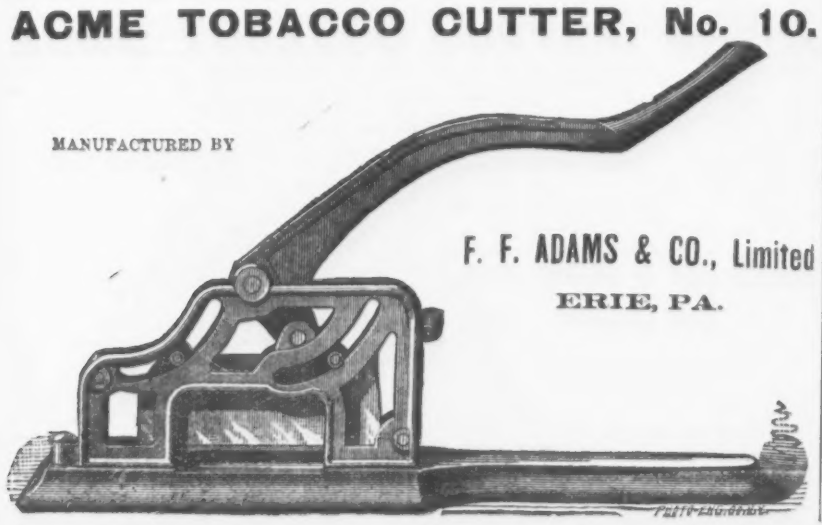

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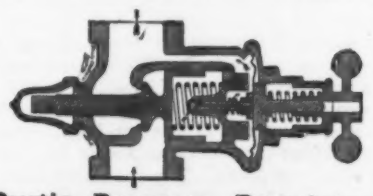

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Sample Orders Solicited.

and examine persons under oath or otherwise, and to cause depositions to be taken and certified under such regulations as they may adopt.

"3. Said committee shall have power to appoint a clerk at a salary of $6 a day, and to employ such stenographic aid as may be necessary, and to appoint a sergeant-at-arms from the officers or employees of the Senate; and the actual and necessary expenses of said committee, properly incurred in the execution of these resolutions, shall be paid out of the contingent fund of the Senate."

PETITION OF THE NATIONAL FEDERATION OF LABOR.

On the same day that Mr. Blair reported the resolution on the labor investigation, he had somewhat of a tilt with the Senate to secure permission to print in the record the petition of the national federation of labor. After considerable persuasion, however, claiming that the document embodied the views of the workingmen of the United States, expressed through their official organization in the District of Columbia, and had special relation to the proposed inquiry of the Committee on Education and Labor, the Senate waived further objection. This novel document, proposes to present "some of the causes producing the widespread feeling of discontent which prevails among their fellow-workmen of the United States" and expresses appreciation of the steps taken by the Senate to ameliorate their social condition through the lawful power of the Nation. It also asserts the constitutional power of Congress to afford the remedy required, and then proceeds:

THE CHARGE AGAINST THE CAPITALIST.

But your petitioners respectfully submit to your enlightened judgment as Senators, that the existing relations of capital and labor are not adjusted in accordance with the principles of equity or fair dealing, and so long as these unfair relations are permitted by the law-making power to exist without some radical modification, all efforts to "insure domestic tranquility" will be futile; order cannot be enforced where justice is violated, except by a deplorable system of tyranny which would result in wholesale destruction of life and property, perhaps. The average wage workmen of the nation, owing to the inability of their parents to maintain them at schools and colleges, spend the days of their youth in acquiring the skill and developing the muscle necessary to fit them for their several avocations, rendering them valuable citizens and indispensable auxiliaries to the general welfare of the community. When they attain manhood and quit their apprenticeship, commencing life as journeymen mechanics, they find capitalists without mechanical skill (as a general rule) in full possession of all the profitable branches of the trade or business to the mastery of which the unfortunate workmen had previously devoted their entire youth in acquiring. With this cheerless prospect before them, the moneyless workmen have no recourse but to sell their dearly bought skill and labor upon such terms as the greedy capitalist aforesaid may see proper to allow them—a rate of wages generally very slightly in advance of the bare cost of subsistence. The hope of acquiring enough money to enter into competition with their employers by saving the scant surplus of their daily wages is exceedingly thin, and the mere contemplation of such an idea is in a great degree demoralizing to a young man of ambitious spirit. The Government considers a fair valuation of capital invested to be 3½ per cent. per annum. In excess of this rate is illegal usury. The journeyman mechanic usually finds the capital invested in the prosecution of his own business yielding to the investors 40, 80, or 100 per cent. on the sale of the products of his skill and toil, after deducting his scanty wages. When the heat and burden of the day is over, and he returns after nightfall to his humble home, and hears the plaintive cry of his family for the common comforts of life, which his wages cannot afford, is not some manifestation of discontent a natural consequence of the failure on the part of Congress to fulfill the duty enjoined upon it by the Constitution, to wit, "the establishment of justice?" We submit this inquiry with all due respect and humility to the honorable Committee on Education and Labor. The workmen see but little sympathy manifested for their hopeless condition by the rich employer, grown fat on the unrequited toil of his laborers, and exclusive in his social relations—a great gulf stands between them in the scale of society—and he naturally seeks communion and fellowship with his fellow-sufferers. They organize a trade union, with very limited knowledge of parliamentary or statute law, and endeavor in their humble way to right the wrongs which they feel themselves subjected to by means of a "strike" for better remuneration for their toil. But capital always resists such demands, and imports from abroad, with the surplus means wrung from the toil of the strikers, another hungry crowd of workmen to take their places, driving their old employees out of their homes as despised "tramps." In some cases the defeated workmen, driven to frenzy, are provoked to commit violence, and public indignation is aroused on *ex parte* statements of the case in that portion of the public press deriving support mainly from employers. Then the strong arm of the Government is invoked by capital. To do what? Do they ask for the "establishment of justice"—the paramount object of the State? No! That is not their petition. They ask you to "insure domestic tranquility" by crushing out the strke with the bayonet of the militia or the bludgeon of the police, and thus maintain the capitalist in his "time-honored" system of unjust oppression.

STRIKES MADE PENAL.

It is reported that a law recently passed the Legislature of New York, making it a penal offence for workingmen to combine to commit "any" act injurious to trade or commerce, which implies that a strike for higher wages is to be punished as a criminal offense. What will be the natural outgrowth of such legislation in a free Government? Why does the law-making power of the country skip the first injunction of the Constitution, and endeavor to enforce the second? is a question naturally arising among workmen. The answer to this, is thought by the mass of workmen of to-day, to be found in the popular belief that the working majority in charge of the machinery of the Government has been corrupted in all its branches by the more unscrupulous combinations of capitalists controlling vast corporations; so that this grand social superstructure, founded "by the people and for the people," has been converted from its legitimate purpose into an engine of oppression to the poor for the benefit of the rich, as we are taught by the debates in Congress and elsewhere, more or less authentic. Your petitioners are bound in justice to say, however, that the resolutions of the Senate, which have been referred to the honorable Committee on Education and Labor, indicate a new departure in the conduct of public affairs—a grand stride in the right direction toward a just solution of the labor problem. With the foregoing outline of the causes which lead to strikes, your petitioners respectfully refer to the next succeeding proposition contained in the first resolution, to wit: "What measures can be properly provided to modify or remove such causes of disturbance, and to provide against their continuance or recurrence?"

THE OBJECT OF TRADE UNIONS.

All that the workmen desire to accomplish by their trade unions is an opportunity to pursue their avocations under the eight-hour law and contribute to the general welfare of the nation by their labor and skill, and that they may be permitted to reap their legitimate reward for such labor, thus enabling them to improve their own condition, educate their children, feed, clothe and comfortably shelter their families, and enjoy the blessings of liberty on a perfct equality with their fellow-citizens engaged in other useful pursuits.

THE CREDIT OF THE GOVERNMENT TO PROMOTE LABOR.

We believe this result can be accomplished by the wise men of the nation assembled in Congress from time to time if they will boldly undertake to "establish justice" in the relations between capital and labor. Precedents in legislation are abundant wherein the credit of the Government has been extended to corporations organized for the "promotion of the general welfare," and if national organizations of workingmen are encouraged to incorporate under the general laws for the prosecution of their legitimate business, if deemed by the Congress to be promotive of the general welfare, it seems practicable to your petitioners that such corporations might be allowed to issue stock or bonds bearing interest at 3½ per cent. per annum to enable them to establish their manufacturing enterprises, and give to the Government a first mortgage on their factories and workshops in consideration of the Government guaranteeing the payment of the interest on such bonds as it falls due. By law the prices of such products could be controlled by the constitutional power of Congress over trade and commerce, so as to yield a fair day's wages for a reasonable day's work to every member of the corporation according to their relative degrees of merit as workmen, and at the same time protect the general community from oppressive exactions. The surplus profits derived from the business of each corporation could be utilized in building comfortable homes for the membership of each, and educating their families, raising them above the social grade which their present enforced poverty compels them to occupy. Under such a "co-operative system," regulated by national law, it is believed capital will reap its legitimate share, and honest labor its equitable reward. This theory, which is perhaps crudely presented, may appear to be an abridgement of the large liberty so long enjoyed by the avaricious capitalist in the employment of labor at his own terms, and selling its products at such enhanced valuation as the community can bear, without let or hindrance by law, making the rich richer and the poor poorer; but your petitioners firmly believe that their fellow-workmen, after their long period of enforced servitude as the mere thralls of the money centers of the country and their unscrupulous agents retained as task-masters, would hail such a beneficent measure of protection to the honest laborer as a happy deliverance from poverty, want and social degradation, and they would speedily realize that the Federal Government, in its second century of development, is a blessing to the industrious workman, instead of proving, as we are now inclined to regard it, a crushing and extortionate gatherer of taxes from the working elements to be squandered among idle, vicious and worthless political stipendiaries, who revel in the possession of unearned honors and gains, and look down upon the unrequited laborer with supercilious contempt and scorn. The public officer and the legislator under such a régime will be supported and respected as faithful public servants and benefactors, as they should be under a wise paternal government, seeking by proper measures to make our country the workshop of the world, and attracting to our shores the best skilled labor among civilized mankind.

THE COMMITTEE'S PURPOSE.

The Committee on Education and Labor propose to make their investigations as thorough as possible, and will endeavor to clearly define the powers and duties of Congress in the premises, so as to approximate, at least, as to where the responsibility rests as regards a continuance or recurrence of these disturbances.

THE TARIFF COMMISSION.

The members of the Tariff Commission have indicated their departure in time for the meeting proposed here to-morrow. The object of this gathering is simply for organization, and the selection of a central locality to suit the convenience of those who may have business before the commission. The choice of locality seems to rest between Saratoga and Long Branch. Professor Porter, the Commissioner from the District of Columbia, is still most prominently named for secretary.

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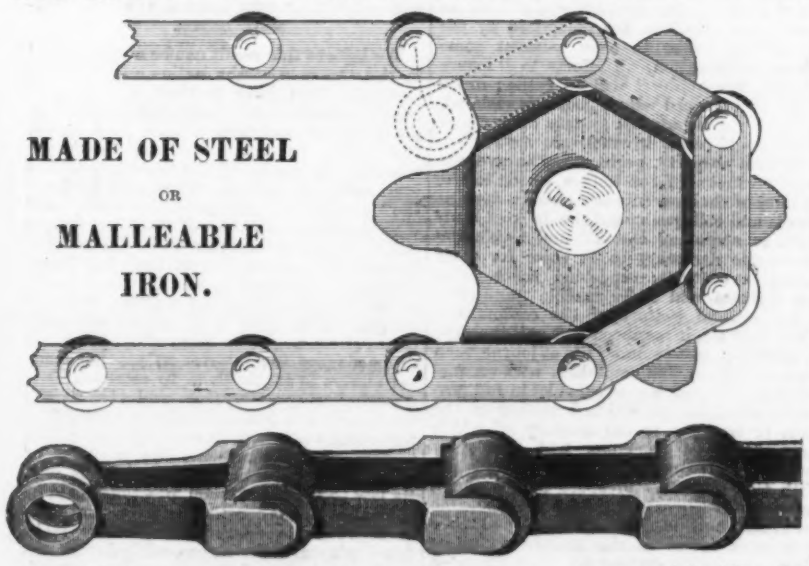

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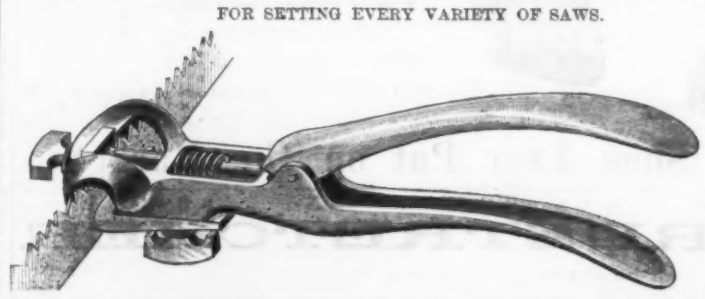

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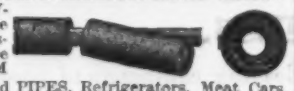

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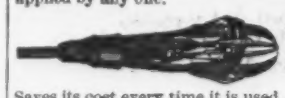

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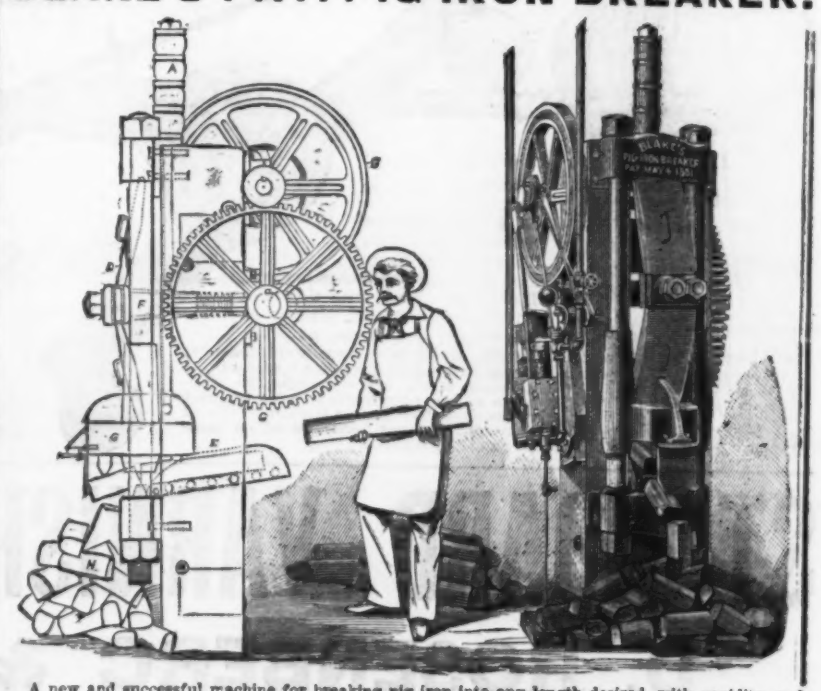

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Steel and Rolled Iron Statistics for 1881.

We continue herewith our abstracts from the valuable annual report of Mr. James M. Swank, Secretary of the American Iron and Steel Association, now in press :

PRODUCTION OF BESSEMER STEEL IN 1881.

The total quantity of Bessemer steel ingots produced in the United States in 1881 was 1,539,157 net tons, or 1,374,247 gross tons. The production in 1880 was 1,203,173 net tons ; in 1879, 928,972 net tons ; in 1878, 732,226 net tons. The increased production of 1881 over 1880 was 335,984 net tons, or 28 per cent. ; over 1879 it was 610,185 net tons, or 66 per cent. ; and over 1878 it was 806,931 net tons, or 110 per cent. The production of Bessemer steel ingots in this country in the 10 years from 1872 to 1881 has been as follows, in net tons :

Years	Net tons.	Years.	Net tons.
1872	120,108	1877	560 587
1873	170,652	1878	732,226
1874	191,933	1879	928,972
1875	375,517	1880	1,203,173
1876	525,996	1881	1,539,157

Bessemer steel ingots were produced in 1881 by 13 works, of which 7 are in Pennsylvania. Two new works, both in Pennsylvania, produced Bessemer steel in 1881 for the first time. These works are those of the Pittsburgh Bessemer Steel Company, Limited, located at Homestead, near Pittsburgh, having two converters, and the Pittsburgh Steel Casting Company, of Pittsburgh, having but one converter. The Pittsburgh Bessemer Steel Company, Limited, made its first blow on March 19, 1881, and the Pittsburgh Steel Casting Company made its first blow on August 26, 1881. The latter company, as its name imports, intends to produce Bessemer steel castings, but it also proposes to produce Bessemer steel in other forms, a blooming mill being now in course of erection. Some extensions were made to old works in 1881, one new works has been completed and put into operation since the close of the year, and two new works are now in course of erection. Some extensions were made to old works in 1381, one new works has been completed and put into operation since the close of the year, and two new works are now in course of erection. The newly completed works are those of the Colorado Coal and Iron Company, located at South Pueblo, Colorado, which made their first blow on April 11, 1882. New Bessemer steel works at Scranton, in Pennsylvania, and at Chicago, are expected to go into operation this year. The new works at Chicago are owned by the North Chicago Rolling Mill Company, but are located at some distance from the company's old works, and hence virtually form a separate establishment, although not classified as such. A comprehensive exhibit of the 15 Bessemer steel works of the country which are completed or in progress is as follows :

Names of Companies.	Converters. Completed.	Converters. Building.
Albany and Rensselaer Iron and Steel Co., Troy	two 6¼-ton	
Bethlehem Iron Co., Bethlehem	four 7-ton	
Pennsylvania Steel Co., Steelton	two 6½-ton three 8-ton	
Lackawanna Iron and Coal Co., Scranton	two 7½-ton	
Cambria Iron Co., Johnstown	two 6-ton	
Carnegie Bros. & Co., Limited, Bessemer	three 10-ton	
Pittsburgh Bess. Steel Co., Lim., Homestead	two 4-ton	
Pittsburgh Steel Casting Co., Pittsburgh	one 7-ton	
Cleveland Rolling Mill Co., Cleveland	two 10-ton	
North Chicago Rolling Mill Co., (2 plants)	two 6¼-ton	two 10 ton
Union Iron and Steel Co., Chicago	two 5½-ton	
Joliet Steel Co., Joliet	two 5½-ton	
St. Louis Ore and Steel Co., St. Louis	two 6¼-ton	
Colorado Coal and Iron Co., South Pueblo	two 5-ton	
Scrantbn Steel Co., Scranton		two 4-ton
Total	33	4

Only 30 converters were in use in 1881, Carnegie Brothers & Co., Limited, having substituted three 10-ton converters since the close of the year for their two 7-ton converters, and the Colorado Coal and Iron Company having put its two converters at work in 1882 for the first time. The Cleveland Rolling Mill Company used two 6¼-ton converters in 1881.

The American producers of Bessemer steel rolled 1,253,129 net tons, or 1,118,865 gross tons, of Bessemer steel rails in 1881. But this is not the whole quantity of Bessemer steel rails rolled in the United States in that year, as the iron rail mills of the country rolled 77,173 net tons of these rails, chiefly from imported blooms. The total quantity of Bessemer steel rails rolled in the United States in 1881 was, therefore, 1,330,302 net tons, or 1,187,770 gross tons.

The following table shows the production of Bessemer steel rails in the United States and Great Britain in 1880 and 1881, in gross tons :

	1880.	1881.	Increase.
United States	832,196	1,187,770	335.574
Great Britain	732,910	1,023,740	283,830
Excess of United States over Great Britain	112,286	164,030	51,744

The following table shows the production of Bessemer steel ingots in the United States and Great Britain in 1880 and 1881 in gross tons.

	1880.	1881.	Increase.
Great Britain	1,044,382	1,441,719	397,337
United States	1,074,262	1,374,247	299.985
Excess of United States over Great Britain	29,880		
Excess of Great Britain over United States		67,472	97,352

It will be seen from these tables that in 1880 the production of both Bessemer steel ingots and rails by the United States exceeded that of Great Britain, while in 1881 honors were divided, the United States producing the most rails and Great Britain producing the most ingots. But how unequal are all other elements of comparison in the Bessemer steel practice of the two countries ! The British production of Bessemer steel in 1881 was made by 23 works with 82 converters in operation, while that of the United States was made by only 13 works with 30 converters in operation. The average production of each converter in Great Britain in 1881 was 17,582 gross tons of ingots, while the average production of each converter in the United States in the same year was 45,808 tons. In 1882 seven more converters will probably be in use in the United States, while in Great Britain there will be 41 more converters available than were at work in 1881, of which 14 are new.

The production of Bessemer steel rails in this country in the 15 years since 1867, when they were first made to fill orders, has been as follows, in net tons :

Years.	Net tons.	Years.	Net tons.
1867	2.550	1875	290,863
1868	7,225	1876	412,461
1869	9,650	1877	432,163
1870	34,000	1878	550,398
1871	38,250	1879	683,964
1872	94,070	1880	954,460
1873	129,015	1881	1,330,302
1874	144 944		

PRODUCTION OF CRUCIBLE, OPEN-HEARTH, BLISTER AND MISCELLANEOUS STEEL IN 1881.

The production of crucible steel ingots in the United States in 1881 was 89,762 net tons, against 72,424 tons in 1880, and 59,780 tons in 1879. The following table gives the production of crucible steel ingots in various sections of the country from 1874 to 1881, in net tons.

States.	1874.	1875.	1876.	1877.
New England	1,529	1,720	1,998	1,974
New York	2,636	2,300	2,300	2,012
New Jersey	8,164	7,098	6,806	6,749
Pennsylvania	23,289	26,615	28,217	27,983
Western States	570	1,500	700	1,420
Southern States	100	868	261	202
Total	36,328	39,401	39,382	40,430
States.	1878.	1879.	1880.	1881.
New England	1,602	1,608	660	2,780
New York	2,800	2,300	3,500	4,961
New Jersey	7,377	8,651	10,387	14,500
Pennsylvania	30,585	43,614	57,077	66,290
Western States	430	605	800	1,231
Southern States	62	2		
Total	42,906	56,780	72,424	89,762

Seven States made crucible steel in 1881—Massachussetts, Connecticut, New York, New Jersey, Pennsylvania, Ohio and Illinois. Pennsylvania, as has been the case for many years, made in that year about three-fourths of the total production.

The production of open-hearth steel ingots in the United States in 1881 was 146,946 net tons, against 112,953 tons in 1880, and 56,290 tons in 1879. Our open-hearth steel industry has made a rapid advance in late years. In 1874 our total production of open-hearth steel ingots was only 7000 net tons. Rapid, however, as our progress in the production of this class of steel has been, we still fall far behind the production of Great Britain. In 1881 that country produced 338,000 gross tons, or 378,560 net tons, of open-hearth steel. The following table gives the production of open-hearth steel ingots in the United States from 1874 to 1881, in net tons.

States.	1874.	1875.	1876.	1877.
New England	5,300	3,012	6,085	6,052
Pennsylvania and New Jersey	1,700	4,249	7,547	7,771
Western and Southern States	....	1,800	7,858	10,603
Total	7,000	9,059	21,490	25,031
States.	1878.	1879.	1880.	1881.
New England	8,228	14,660	20,360	24,600
Pennsylvania and New Jersey	12,231	29,575	50,736	63,363
Western and Southern States	15,667	22,055	41,675	53,983
Total	76,126	56,290	112,953	146,946

Eight States made open-hearth steel in 1881—New Hampshire, Vermont, Massachusetts, New Jersey, Pennsylvania, Ohio, Tennessee and Illinois. These States had 38 open-hearth furnaces at work in 1881 and 4 furnaces idle. Rhode Island and Kentucky each had one open-hearth furnace in 1881 which was not in operation. The total number of open-hearth furnaces in the country in 1881 was 44.

The production of blister and puddled steel and of "patented" steel in 1881 was only 3,047 net tons, against 8,465 tons in 1880, and 5,464 in 1879. These branches of our steel industry scarcely deserve a separate classification. The following table gives the production of these classes of steel from 1874 to 1881, in net tons.

States.	1874.	1875.	1876.	1877.
New England	375	1,500	.....	.....
New York	200	.....	139	.....
New Jersey	.....	100	652	.....
Pennsylvania	4,417	7,340	7,501	9,870
Western States	1,300	.....	1,700	2,034
Southern States	62	3,667	214	20
Total	6,373	12,607	10,306	11,924
States.	1878.	1879.	1880.	1881.
New England	192	950	72	200
New York	220	215	617	.....
New Jersey	.....	.....	.....	.....
Pennsylvania	8,069	3,004	6,653	2,113
Western States	75	1,100	1,013	734
Southern States	.....	295	100	.....
Total	8,556	5,464	8,465	3,047

The small quantity of blister, puddled and miscellaneous steel which was made in this country in 1881 was produced in Massachusetts, Pennsylvania, Kentucky and Ohio.

PRODUCTION OF ALL KINDS OF STEEL IN RECENT YEARS.

The following table gives the production in the United States of crucible steel ingots, blister steel, and steel made by various minor processes, from 1865 to 1881, in net tons.

Years.	Net tons.	Years.	Net tons.
1865	15,262	1874	42,681
1866	18,973	1875	55,028
1867	19,000	1876	49,688
1868	21,500	1877	52,354
1869	23,000	1878	51,462
1870	35,000	1879	62,244
1871	37,000	1880	80,389
1872	37,000	1881	92,809
1873	48,500		

The following table gives the production in the United States of all kinds of steel in the 10 years from 1872 to 1881, in net tons.

Years.	Bessemer steel ingots	Crucible steel ingots.	Open-hearth steel ingots.	All other steel.	Total.
1872	120,108	29,360	3,000	7,740	160,128
1873	170,652	34,786	3,500	13,714	222,652
1874	191,933	36,328	7,000	6,353	241,614
1875	375,517	39,401	9,050	12,607	436,575
1876	525,996	39,382	21,490	10,306	597,175
1877	560,587	40,430	25,031	11,924	637,972
1878	732,226	42,906	36,126	8,556	819,814
1879	928,972	56,780	56,290	5,464	1,047,506
1880	1,203,173	72,424	112,953	8,465	1,397,015
1881	1,539,157	89 762	146,946	3,047	1,778,912

An increase in our production of steel from 160,108 net tons to 1,778,912 tons in 10 years reads like a fable. The figures are, however, reliable. They undoubtedly record the greatest metallurgical achievement ever accomplished by any country.

PRODUCTION OF BARS, SHAPES, PLATES, SHEETS AND OTHER ROLLED IRON IN 1881.

By the term "rolled iron" we include (1) cut nails and spikes ; (2) bar, shaped, bolt, rod, skelp and hoop iron ; (3) plate and sheet iron, and (4) all sizes of iron rails. Bessemer steel rails are not classed among rolled-iron products.

The production of all kinds of rolled iron in the United States in 1881, including iron rails, was 2,643,927 net tons, against 2,332,668 tons in 1880, and 2,047,484 tons in 1879.

In the following table we give detailed statistics of the production of the different forms of rolled iron in each of the States in 1881, in net tons :

States.	Bar, rod, bolt, hoop, skelp and shaped iron.—Net tons.	Plate and sheet iron, except nail plate.—Net tons.	Cut nails. Kegs.	Cut nails. Net tons.	Iron rails.—Net tons.	Total.—Net tons.
Maine	5,433	.....	.....	.....	2,193	7,626
N. H.	3,000	.....	.....	.....	.....	3,000
Mass	58,524	29,416	525,089	26,254	2,622	116,846
R. I.	10,769	.....	.....	.....	.....	10,769
Conn.	17,589	.....	.....	.....	.....	17,589
N. Y.	106,172	4,945	2,259	113	11,976	123,366
N. J.	53,723	1,825	248,521	12,426	234	71,586
Penn.	714,113	251,228	1,914,706	95,735	193,723	1,254,860
Del.	24,922	10 355	.....	.....	.....	34,275
Md.	18,417	14,215	.....	.....	.....	32,732
D. C.	220	82	.....	.....	.....	302
Virginia	33,934	.....	127,506	6,373	640	41,002
Georgia	3,000	.....	.....	.....	4,000	7,000
Ala.	8,772	.....	.....	.....	2,300	11,072
W. Va.	4,106	6,234	1,241,102	62,055	3 152	75,547
Ky.	15,428	6,048	60,000	3,420	5,000	29,915
Tenn.	1,158	.....	94,495	4,725	23,910	33,793
Ind.	20,482	975	320,400	16 325	41,645	82,430
Illinois.	52,500	.....	352,643	17,632	78,686	148,818
Ohio.	220,247	37,327	862,665	43,033	36,120	345,727
Missouri	12,141	4,500	.....	.....	.....	16,641
Mich.	14,685	6,920	.....	.....	.....	21,605
Wis.	47,478	.....	.....	.....	41,165	88,643
Kansas	10,528	.....	.....	.....	19,016	29,544
Neb.	.....	.....	31,607	1,583	.....	1,583
Col.	3,306	.....	.....	.....	1,643	3,949
Wy. Ter.	3,286	.....	.....	.....	11,886	15,172
Cal.	14,294	.....	.....	.....	5,035	19,839
Total.	1,491,555	373,082	5,794,206	289,709	488,581	2,643,927

Our production of cuts nails in 1881 (5,794,206 kegs) was much the largest in our history. Our next largest production was in 1880, when we produced 5,370,512 kegs. It is a noticeable fact that the production of cut nails in this country has not in recent years advanced with the rapidity that has characterized other branches of our iron and steel industries. In 1873 our production was 4,024,704 kegs, and in 1874 it was 4,912,180 kegs. From 1874 to 1879 the annual production fluctuated between 4,000,000 and 5,000,000 kegs, in the latter year amounting to 5,011,021 kegs. The production in 1880 and 1881 has been mentioned above.

The following table gives the production of all kinds of rolled iron in the United States from 1864 to 1881, in net tons :

Years.	Net tons of 2000 pounds. Iron Rails.	Other Rolled Iron	Total.
1864	335,369	536,958	872,327
1865	356,292	500,048	856,340
1866	439,778	595,311	1,026,089
1867	452,558	579,832	1,039,396
1868	492,483	593,286	1,097,773
1869	533,936	642,420	1,826,356
1870	836,000	705,000	1,291,000
1871	737,483	710,000	1,447,483
1872	905,930	941,992	1,847,922
1873	761,562	1,076,368	1,837,430
1874	534,469	1,110,147	1,644,616
1875	501,649	1,097,867	1,599,516
1876	467,168	1,042,101	1,509,269
1877	332,540	1,144,219	1,476,759
1878	322,892	1,232,686	1,555,576
1879	420,160	1,627,324	2,047,484
1880	491,762	1,838,906	2,332,668
1881	488,581	2,155,346	2,643,927

It has been said that the puddling furnace and the iron rolling mill must soon give way to the Bessemer converter, the open hearth and the steel rolling mill. The table just given shows that in this country the puddling and rolling of iron are steadily increasing.

PRODUCTS OF FORGES AND BLOOMARIES IN 1881.

As we have heretofore explained, blooms and billets from ore are made chiefly in the Champlain district of New York, and blooms from pig and scrap iron are made chiefly in Pennsylvania. The make of each of these products in the last nine years is given below, in net tons. The steady increase in their production in the last three years is an interesting fact:

Products.	1873.	1874.	1875.	1876.	1877.
Blooms and billets from ore	32,863	36,450	24,426	20,784	24,227
Blooms from pig and scrap iron	29,701	25,220	24,827	23,844	23,073
Total	62,564	61,670	49,243	44,628	47,300
Products.	1878.	1879.	1880.	1881.	
Blooms and billets from ore	24,139	30,282	40,652	45,369	
Blooms from pig and scrap iron	25,906	32,071	33.937	39,237	
Total	50,045	62,353	74.589	84,606	

The following table shows the proportion of ore blooms and billets made in New York in the past seven years, and the proportion of pig and scrap blooms made in Pennsylvania in the same time, in net tons :

Years.	Ore blooms and billets made in New York.	Total make of ore blooms and billets.	Pig and scrap blooms made in Pennsylvania	Total make of pig and scrap blooms.
1875	23,666	24,416	19,032	24,827
1876	20,202	20,784	13,401	23.844
1877	23,466	24,227	16,317	23,073
1 78	22,829	24,139	15,121	25,906
1879	27,290	30,282	23,956	32,071
1880	34,358	40,652	24,319	33,937
1881	39,892	45.362	28,342	32,257

The production of both products from 1865 to 1881 has been as follows, in net tons :

Years.	Net Tons.	Years.	Net Tons.
1865	63.977	1874	61,670
1866	73.565	1875	49,243
1867	73,073	1876	44.628
1868	75,200	1877	47,300
1869	69,500	1878	50.045
1870	62,259	1879	62.353
1871	63,000	1880	74,589
1872	58,000	1881	84,606
1873	62,564		

GRAND SUMMARY OF UNITED STATES STATISTICS FOR 1881.

Production of pig iron in 1881, net tons	4,641,55
Production of spiegeleisen in 1881 (included in pig iron), net tons	21,03
Production of all rolled iron, including nails and excluding rails, in 1881, net tons	2.155,346
Production of cut nails and spikes in 1881 (included in all rolled iron), kegs of 100 pounds	5,794,206
Production of Bessemer steel rails in 1881, net tons	1,330,302
Production of open-hearth steel rails in 1881, net tons	25,217
Production of iron and all other rails in 1881, net tons	488.581
Total production of rails in 1881, net tons	1,344,100
Production of iron and steel street rails in 1881 (included above), net tons	21,554
Production of crucible steel ingots in 1881, net tons	89,762
Production of open-hearth steel ingots in 1881, net tons	146,946
Production of Bessemer steel ingots in 1881, net tons	1,539,157
Production of blister and "patented" steel in 1881, net tons	3.047
Production of all kinds of steel in 1881, net tons	1,778,912
Production of blooms from ore and pig iron in 1881, net tons	84,606
Imports of iron and steel in 1881	$61,555,078
Exports of iron and steel in 1881	$15,782,232
Imports of iron ore in 1881, gross tons	782,837
Production of Lake Superior iron ore in 1881, gross tons	2,336,333
Production of iron ore in New Jersey in 1881, gross tons	737,052
Total production of iron ore in census year 1880, net tons	7,974,705
Production of anthracite coal in the census year 1880, net tons	28,646,995
Production of bituminous coal in the census year 1880, net tons	42,420,581
Production of anthracite coal in 1881, gross tons	28,500,016
Miles of railway completed in 1881	9,650
Miles of railway in the United States December 31, 1881	103,331
Miles of railway track in the United States December 31, 1881, including double track, sidings, &c., (estimated)	130,000
Iron ships built in the United States in the fiscal year ended June 30, 1881	42
Net imports of foreign merchandise into the United States in the 12 months ended April 30, 1882	$579,460,510
Exports of domestic merchandise out of the United States in the 10 months ended April 30, 1882	$635,867,349
Net imports of specie into the United States in the 10 months ended April 30, 1882	$25,875,247
Exports of domestic specie out of the United States in the 10 months ended April 30, 1882	$22,708,081
Immigrants into the United States in the calendar year 1881	720,045

The Properties of Mild Steel.

Interesting facts concerning physical tests and properties of mild steel, were embodied in a paper read by Mr. E. Richards at the recent meeting of the British Iron and Steel Institute, London. A number of experiments had been made by the author, and though they are not, perhaps, of the most practically useful character, they may be of interest as affording an explanation of some phenomena which do not appear to be generally well known or thoroughly understood. The material employed in the experiments was a hammer billet of steel of soft quality, made by the Siemens-Martin process and rolled to the form of a bar 1⅞ inch square. Chemical analyses of borings obtained from it gave the following results :

Carbon	.192	Manganese	.430
Silicon	trace	Iron	99 260
Sulphur	.040		
Phosphorus	.048	Total	100.000
Copper	.021		

The bar was divided into eight portions, which were numbered from 1 to 8. The pieces were turned to the desired form for testing ; Nos. 1 and 4 being finished to the cylindrical form for ordinary tensile test ; Nos. 2, 5 and 8 being ground transversely to illustrate the effect upon the tensile strength ; No. 3, to ascertain the effect of a long-continued tensile strain approaching the elastic limit ; No. 6, to determine the tenacity of steel which has been previously subjected to a tensile strain approaching the maximum load ; No. 7, to ascertain the tenacity of steel which has been previously submitted to a compressive strain. Where practicable the transverse sectional arc was made equal to 1 square inch, and the specimens for ordinary tensile tests were marked carefully with fine center-punch marks placed a distance of 8 inches apart. The tensile tests were made as follows : The specimen was strained until an extension equal to 1-100th inch was observed ; the tension was then noted. The specimen was then pulled until a further small extension was observed ; the strain borne was again noted, and so on, these observations being made at frequent intervals during the elongation of the specimen until fracture took place. In some instances the strain and extension were observed forty times during the progress of one test. The diameter of the specimen was also measured at each successive extension, and sufficient data was thus obtained to enable the construction of a diagram, not only of the extension and varying strain on the specimen, but also of the mechanical work done in breaking it, a quantity which the late Dr. Fairbairn regarded as being of the highest importance in the consideration of the quality of metal best suited to resist a strain analagous to that of impact. The tenacity or "cohesive force" of the metal was also circulated from these data.

The ultimate extension of the specimen, as is well known, varies considerably in different portions of its length, and is, of course, greatest near the fracture. The extension is also irregular at different periods of the test, although the bar is perfectly uniform in diameter. It does not take place simultaneously throughout the length of the bar ; for instance, with an extension of 1-10th inch the specimen is sometimes drawn in one place, near to one end, the diameter becoming visibly smaller, tending to give one the impression that the bar is weaker there than in any other part. During the next 10th or 2-10ths inch extension, the bar will often draw in the larger part, so that the diameter may again become nearly uniform ; afterward the bar may elongate at the other end of the specimen. Occasionally the sectional area will become reduced in two places at the same time, with a larger part intervening, and the fracture often occurs at some point which was the least extended in the early period of the test. It therefore appears that when one part elongates more than another, it may become so much stronger at the small part under the strain that it will not extend further until the larger part has drawn in a similar manner. When the maximum strain is passed "local extension" takes place; that is, the specimen elongates only in the neighborhood of the smallest part : the sectional area continues to reduce, but the tensile strain also diminishes as the specimen elongates, diminishing slowly at first, and more rapidly as the point of rupture is approached ; in fact, so rapidly that it is often a difficult matter to observe the exact strain borne by the metal immediately before fracture. In the specimen No. 1 the strain diminished during local extension from the maximum 28.35 tons to 25.05 tons just before breaking, a diminution equal to 11.78 per cent. The sectional area also decreased from .8168 square inch to .5541 square inch, a reduction of 32.16 per cent. As the contraction of area goes on in a greater ratio than the diminution of strain, a peculiar feature in the behavior of the metal becomes evident, viz., that the tenacity per square inch of reduced area does not diminish after the maximum strain is passed ; on the contrary, it increases largely until the bar is fractured. Some experimentalists have followed the practice of recording in tables of results the quantity termed by them "tensile strength per square inch of contracted area." This quantity, according to Mr. Richards, is misleading, being obtained by the use of two data that are not coincident. The maximum strain is calculated, not on the area at the moment the maximum strain is reached, but on a subsequent smaller area (the fractured area), which is not capable of bearing the maximum strain. The quantity obtained does not, therefore, represent the real ultimate tenacity or cohesive force of the metal, except in the case of the hardest and most brittle quality of steels, which usually break at the maximum load. The extension of the specimen above mentioned was 2.2 inches on 8 inches, being about 27.5 per cent. The contraction of sectional area was 44.59 per cent., and the fractured surface was silky in appearance. The work expended in producing rupture was 55.85 inch-tons, or 125.115 inch-pounds, equal to an average of 6.98 inch-tons, or 15.639 inch-pounds for each lineal inch of the specimen. The formula which Dr. Fairbairn used in calculating the mechanical work is $u = \frac{1}{2} P l$—u being the mechanical work, P, the strain in pounds reduced to unity of action, and l, the corresponding elongation reduced to unity of length. This formula, Mr. Richards states, gives correct results only if the material of the specimen is so elastic as to permit of the total temporary extension of 2.2 inches, without any permanent elongation. As used by Dr. Fairbairn for obtaining a comparative measure of the power of resistance of different bars to impact, this formula would afford reliable, although not exact results. Other engineers have used the simple formula $u = P, l$, which is in excess of, but does not deviate so much from, the exact quantity. The formula deduced from results obtained in testing this specimen by the author should be $u = .90 P, l$. Another sample of very soft ingot metal made for tin bar purposes, and having a tensile strength of 25 tons per quare inch, gave results which would agree with the formula $u = .90 P, l$. Soft Bessemer steel having a tensile strength of 31 tons per square inch, gave the formula $u = .89 P, l$. The mean of the three soft qualities of steel gives .90 as the coefficient ; and this was confirmed by the results obtained in testing some Siemens steel plate, having a tensile strength of 32 tons per square inch. It is curious to observe the change in the appearance of a turned specimen, finished smooth and bright, when tested up to fracture. The external surface loses its beautiful brillant luster, and acquires a frosted appearance, becoming rough to the touch, and offering some frictional resistance to the calipers used for measuring the diameter. Examined under a magnifying lens, it resembles a number of blunt pin points projecting outward from the surface ; under the microscope it has a crystalline appearance somewhat like the fracture of gray iron.

In experimenting with a specimen of tin-bar steel having a tensile strength of 25.35 tons per square inch, Mr. Richards found that with a strain of 21.78 tons the piece extended 32 per cent. on a length of 8 inches, the contraction being 51.6 per cent. of the original sectional area. On stopping the pumps, the strain fell at once to the elastic tension, 20.44 tons, the difference, 1.34 tons being due to frictional resistance of molecules. Although the specimen was so near the point of rupture, and the breaking load was afterward found to be only 18.48 tons, yet the specimen sustained the strain of 20.44 tons during the two hours without any further extension taking place ; in fact, before the specimen could be made to yield, it was found necessary to increase the strain to 21.70 tons, or nearly the same load as was on the specimen when the pumps were stopped. Presuming that the cohesive force of any particular quality of steel remains the same, temperature and other conditions being constant, it is evident that if, by any means, the flow of this mild steel could be altogether prevented, there would be no reduction of area, and the tensile strength would be equal to the cohesive force exerted over the whole of the original area. It is almost impossible to entirely prevent the flow of the metal under tension, but the specimen may be so shapen as to admit of but a small reduction of area, and the tensile strength of such a specimen compared with a specimen of the ordinary form is found to be very largely increased. The truth of this proposition was illustrated by a specimen, the central cylindrical portion of which was turned to a diameter of 1¾ inch for a length of 8 inches, while a groove 3-32d inch in width was turned with a round-nosed tool at the middle of the bar to a depth sufficient to have the diameter at the bottom of the groove 1¼ or 1 square inch in area. This specimen bore a strain of 26.50 tons at .01 inch extension. No sudden relaxation of strain corresponding with the elastic limit was observed, and the strain gradually increased at each extension of 1-100th inch up to 40.84 tons per square inch, when the specimen broke suddenly, the fractured surface being of a dark crystalline appearance at the center and silky near the circumference. The shortness of the extended portion precluded the observation by ordinary dividers of a "breaking-down" period when the elastic limit was reached, and for the same reason no gradual diminution of strain was observed, even if it took place after the maximum strain was reached. In dealing with grooved specimens of the softest class of mild steel, it is, however, possi-

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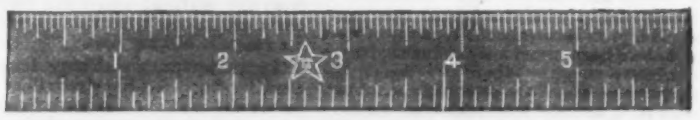

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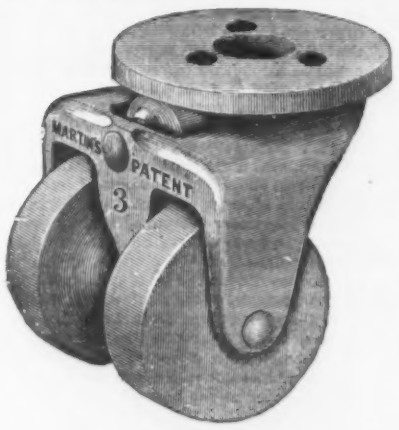

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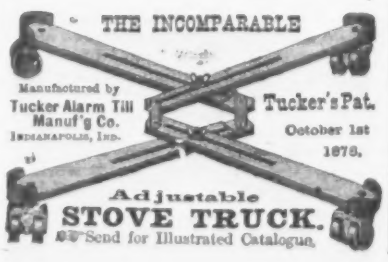

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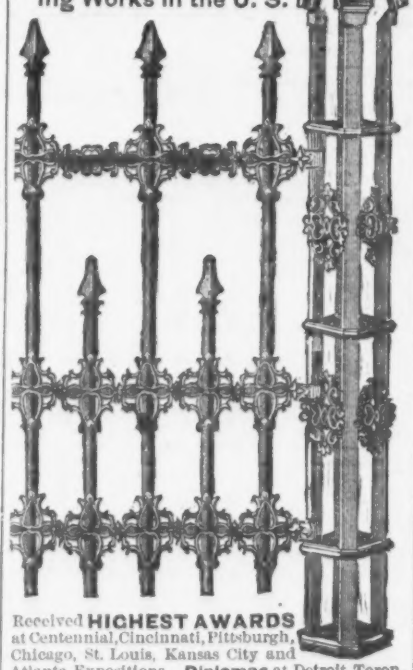

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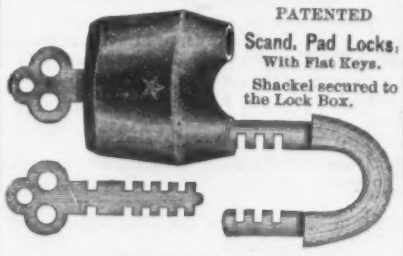

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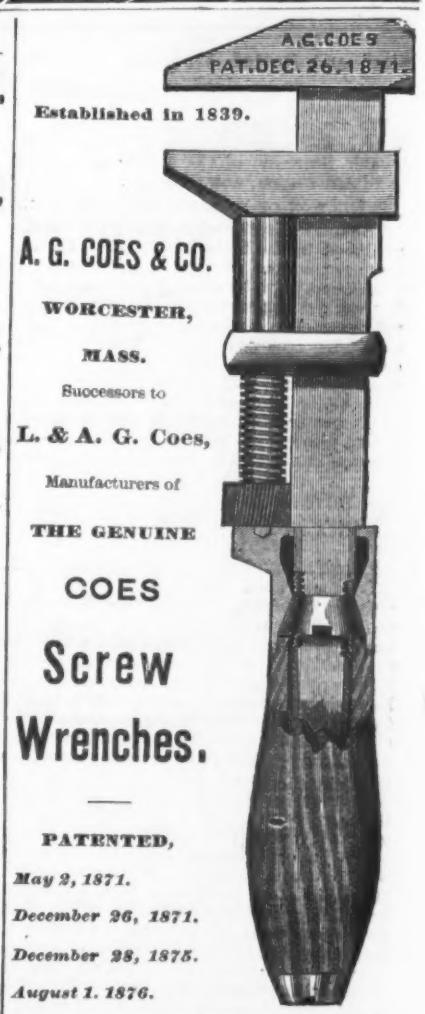

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ble to observe both the elastic limit and the diminution of load after the maximum strain. This may be done by extending the specimen at an extremely slow rate, and by the aid of suitable apparatus for measuring very minute extensions. The extension at the moment of fracture was .09 inch = 100 per cent. The reduction of area measured after fracture was 13.45 per cent. only, against 44.59 per cent. in the ordinary tensile test specimen No. 1. The strain was so great as to cause a small contraction (2.82 per cent). of the sectional area of the large portion of the specimen; and there can be no doubt that the extraordinary high percentage of extension, accompanied by so small a reduction of sectional area in the grooved part, is to be accounted for by the metal being drawn from the large part on either side into the constricted portion.

Mr. Richards explains the cause of the difference in flow and the increased tenacity of the grooved specimen by the following theory: Let a filament or single chain of molecules or atoms of ductile metal be imagined to be submitted to tensile test, and let the length of the chain be 8 inches. Under tension each molecule would become separated from its neighbor so far as their cohesive attraction would permit. On releasing the strain the molecules would return to their original positions, and no permanent extension of the chain would have taken place, the chain being perfectly elastic. The greatest distance which one molecule could be separated from its neighbor would be an infinitely small quantity, and the total of the numerous extensions of the intermolecular spaces would probably not exceed 3-100ths of an inch on the full length of the chain (8 inches.) This extension would represent the real limit of elasticity, beyond which rupture would ensue. The strain borne under this greatest temporary extension would be the elastic limit, the cohesive force and the tensile strength. If the extension were pushed beyond this limit of 3-100ths of an inch, or thereabouts, on 8 inches, the chain of molecules would break, but each broken portion of the chain would show no indication of permanent set. Now, a cylindrical test bar of mild steel may be regarded as a vast aggregate of chains of molecules, each link having the peculiar faculty, under high tension, of leaving its own chain and taking up a position between the two nearest links of an adjoining chain of molecules. The chains of molecules may thus become permanently elongated by the addition of new links, but they are at the same time reduced in number. The permanent elongation of a specimen is an indication that such a flow of the molecules has occurred. The direction of the flow of the molecules is from the exterior to the interior, and the specimen diminishes in diameter. Each chain, in the aggregate, may be supposed to be capable of bearing the same strain as if tested alone, or, as if it had not become elongated by the addition of neighboring molecules; but, as the chains are fewer in number, the total strain carried by the whole mass prior to rupture is less than if the flow of the links or molecules could have been prevented. For a simile, it is plain that 1000 feet of ordinary iron chain, having a tensile strength of one ton, may be divided into a hundred equal lengths of 10 feet, which, by their combined tension, may be made to support a load of 100 tons; but, if the chain be divided into 50 parts, each 20 feet long, the united strength of the 50 parts is only 50 tons. In the case of a test specimen of ductile material, each molecule, however, is not only a link of a chain in a longitudinal direction, but it may also be regarded as a constituent link of molecular chains in all directions, including, of course, the transverse. This is evident from the equal tenacity of specimens of steel plate cut from the plate either longitudinally, transversely, or in any other direction. In an ordinary 8-inch cylindrical specimen, the end links of the transverse molecular chains come to the surface and are free. They therefore offer no tensile resistance to the flow of the molecules in a transverse direction. In a grooved specimen the transverse molecular chains are not free, but are united to the ring of external metal, and if this ring be of sufficient strength to resist the transverse tension, the reduction of area will be so slight that the tensile strength per square inch of the specimen will be approximate to the cohesive force. Although a high strain is required to break a grooved specimen, yet the extension before rupture is so small, owing to the shortness of the extended part, that the mechanical work done in breaking the bar is trifling. A ductile or a hard cylindrical test specimen, having a transverse groove in it, must always break in the grooved part, provided the metal be in a normal condition—that is, of homogeneous quality and free from undue internal strain. From this it may be concluded that abrupt variations in the dimensions of pieces of machinery, or portions of structures subject to blows or vibrations, should be avoided.

The results of numerous experiments have proved that the tensile strength of steel plate of mild quality, perforated with drilled holes, is greater than that of the same plate unperforated. It was found by Professor Kennedy that the excess of tensile resistance of drilled specimens of Landore steel of mild quality over unperforated specimens was about 11.2 per cent. The flow of the metal in the unperforated piece being less than in an ordinary one, the cohesive force is developed on larger area, and a higher load can consequently be borne.

It has been remarked by Dr. Siemens that by careful manipulation the breaking strain of a bar of a given sectional area may be raised to an appreciable extent, becoming gradually accustomed to the strain. Mr. Richards, however, found no difference in the elastic limits and tensile strengths of two different specimens, one of which had been previously subjected to strain and then relieved. In another experiment the test was varied by proceeding directly with the extension of the specimen, without first removing the strain which it had borne, and the results were similar to those in the first experiment. In investigating the effect of tension after tension, a specimen 1½-inch in diameter, and 12 inches long (elastic limit being 17.31 tons per square inch), was subjected to a strain until an extension of 1 inch on a length of 8 inches had taken place. The specimen was then removed from the machine, and was turned down to the ordinary dimensions, 8 inches by 1⅛-inch diameter.

On resuming the test, a marked difference in the behavior of the metal was observed, the elastic limit being reached only after the application of a load of 33.75 tons, or about twice that of the original elastic limit. The strain then gradually diminished, fracture taking place at 31.3 tons. The elongation was only 6½ per cent., the contraction being 30.61 per cent., showing that the extension had been chiefly local. In another experiment a specimen was turned to a diameter of 1¼ inch for a length of 9 inches, and was then submitted to a compressive strain until it had become shortened a ¼ inch, the load on the bar being 21.25 tons, equal to 17.12 tons per square inch of original area, or 16.84 tons per square inch of increased area. Under this pressure the bar was buckled into the form of an elongated letter S, the strain being resolved into a double-bending strain, instead of a pure compressive strain. The bar was then taken out of the testing machine, and was roughly straightened under hydraulic pressure equal to 40 tons, the surface of the round bar becoming somewhat flattened by the treatment. A variety of strains was thus set up in the bar, which was afterward turned down to a sectional area of 1 square inch, and was then submitted to tensile test. There was no distinct "breaking-down" period under tension, but the "elastic limit" appeared to be increased from 17.41 tons, to 20.14 tons, equal to an increase of 13.5 per cent. The maximum strain was also increased from 28.35 tons to 30.18 tons, an increase of 6 per cent. The elongation was less than in the normal specimen No. 1, being only 20 per cent., against 27½ per cent.; and the contraction of sectional area was 35 per cent., instead of 44.5 per cent.

A piece of soft Bessemer steel of excellent quality was selected for still another experiment, the test piece being subjected to tension after torsion. It was made by the Barrow Hematite Steel Company from hematite iron and ordinary spiegeleisen about 14 years ago, ferromanganese not being used at that time in the manufacture of mild steel. The specimen for torsion was turned from a rolled 2-inch square bar, the original square section being left at the middle to hold the bar, while the ends were twisted simultaneously until the bar became sheared on one side or the other by the strain. The twisted specimen was slotted into two halves; one end was heated to a red heat, drawn out of the furnace and allowed to cool on the iron floor of the forge, the object of this treatment being to allow the molecules of the bar to free themselves from strain, in order to bring the bar into its normal condition as it was before torsion. The other half was not heated. Specimens were then turned to the same form from the two pieces, and were submitted to tensile strain. The results were as follows:

	Annealed.	Not Annealed.
Elastic limit	19.59 tons.	29.88 tons.
Tensile strain per sq. inch	31.01 tons.	37.77 tons.
Cohesive force	55.47 tons.	57.89 tons.
Elongation on 4 in.	26.25 per cent.	11.25 per cent.
Contraction of sectional area	57.30 per cent.	49.57 per cent.
Mechanical work for length of 4 inches.	28.94 inch-tons	15.15 inch-tons

The results of this test are of special interest as they prove one curious fact, viz., that when a bar is strained in such a manner as to alter its elasticity, time alone has little or no influence afterward in permitting the molecules to rearrange themselves so as to become free from strain. The interval of time between the torsional test and the subsequent tensile test of the bar was 14 years, and it appears that the bar remained in a highly elastic condition during the whole of that period. The experiments prove that the elastic limit of a steel bar varies according to its treatment previous to testing, and, in one sense support the opinion of Dr. Siemens, that any mechanical treatment to which mild steel is subjected has invariably the effect of increase of strength. The precise meaning of the term "strength" is, however, of considerable importance in this connection. If by increase of strength is meant increased resistance to statical pressure, these experiments confirm Dr. Siemens' observation. If the "strength" of the material be taken to mean its power of resisting impact, then mechanical treatment has the effect of diminishing the strength. In concluding, Mr. Richards briefly dwelt upon some magnetic indications which may be observed in the process of making tensile tests on steel bars, stating, at the same time, that there appeared to be a wide field for investigation in this branch of physics.

Locomotive Boilers.

The following abstract of the report of Mr. R. Wells, Chairman of the Committee on Boilers of the Master Mechanics' Association, is one of great interest. Though intended for perusal of railroad master mechanics, it contains information valuable to the general engineer as well as to boiler users. The locomotive boiler is a very popular form of steam generating apparatus, and the experience gained upon the locomotive is equally applicable to the portable engine, in which this form of boiler is largely used. Among our best engineers it is looked upon with great favor, and in several notable instances, as, for example, those built by Leavitt for the Calumet and Hecla, it is given conspicuous preference. The report here given is a synopsis of the latest information on this subject:

As regards the material to be used in the construction of boilers, homogeneous steel, as now made in this country, leaves but little to be desired; but, notwithstanding its excellence, it is not entirely free from ruptured side sheets in the large class of locomotive boilers, where the box is deep and the water used deposits a hard scale. The fault, in most cases, is not so much with the material as with strain from compression beyond the elastic limit. That fire-box sheets are frequently subject to such undue strains, as was shown by a series of tests published in the tenth annual report of the association. The formation of the steel is such as to increase expansion by allowing it to attain a temperature higher than it otherwise would, developing strains in the sheet that sometimes produce permanent elongation or contraction in a comparatively small section of the sheet; and when the temperature becomes uniform in all parts of the sheet, the part under tensile strength is liable to rupture, beginning always at a stay-bolt hole.

On some of the divisions of the road with which the writer is connected, not 5 per cent. of the fire-box sheets in engines doing heavy work have cracked during the past 10 years. The water used deposits very little scale. On other divisions, more particularly those north of the Ohio River, the facts are somewhat different. When the water is more or less impregnated with lime and other impurities, the life of fire-boxes is probably not more than one-half the average of those used on lines south of the Ohio River.

The character of water used has, of course, an important influence on the life of a fire-box and tube ends, but even with the best of water a fire-box has its day. With good water the flanges of the tube sheets, and the back sheets from the top of the grate about 36 inches up, are the points which ordinarily give out. With water which makes a heavy scale the side sheets give out at the stay-bolts. It is important in all cases that the flanges of fire-box sheets should be as short as possible. The closer the seam is to the corner the longer it will last. This is a matter which, I conclude from observation, is very often overlooked in fire-box construction. All laps exposed to the fire should be as short as possible, especially where the heat is great. If properly turned, the flanges need not be more than 2 inches from the face of the sheet in the vertical seams for a distance of 2 or 3 feet above the grate. A lap of 1¼ inches for the seam is sufficient at that place. Further from the grate the lap and length of flange may be increased without danger. I have noticed many cases where tube sheets were much worn around the end of the tube in the form of a countersink about ¼ inch wide, and the same in depth around the lower and central tubes, while at other points the sheets were apparently good. Such wear is almost always found in engines which are doing work with boilers too small for their cylinders. With copper tube sheets the wear from this cause seems to be even greater than with steel sheets. This cutting away is due, probably, to the impact of particles of coal and cinder drawn toward the tubes by the force of the draft. The action of these particles is the same as that of sand in the sand blast. If this theory is correct, it is well to have as little projection of the tube ends as possible. To countersink the tube hole sufficiently to receive the flange on the end of the tube without leaving a sloping projection on its outer edge will add to the life of the sheet.

As regards improvement in the design of boilers, little that is new can be said. The first successful locomotive boilers were of the tubular pattern, the fire-box surrounded by a water-space. The same form is used today, and, until some new method of generating power is discovered, we may be obliged to continue using it. The "Verderber" boiler, without water-space around the fire-box, was tried on several locomotives on one of the Hungarian roads, but it seems to have been a failure.

In designing a locomotive boiler the character of the fuel should be carefully considered, especially in proportioning the grate area of the fire-box. I will give the results of a series of tests made in the boiler of one of the passenger engines of the Louisville and Nashville R. R., in April and May, 1882, with seven different kinds of coal. The engine had 18 x 24-inch cylinders, 5 feet 3 inch drivers, 8 wheels, a boiler 54 inches in diameter, the wagon top raised 6 inches above the cylinder part and a 30-inch dome. The fire-box was 72 x 34 inches at the grate. There were 191 2-inch tubes 11 feet 5½ inches long. The fire-box with brick arch, supported on four water pipes tapped into the sheets below the boiler tubes and into the crown sheet 13 inches from the back sheet. The live grate area was 12½ feet; tube surface (inside) 1052 feet: heating surface of fire-box, 115 feet—total, 1167 feet; deducting for tube holes, fire-door and surface below grate. During the tests the engine was run and fired by the same men, the coal carefully weighed and the water measured. The average speed run was 27 miles per hour, and the average number of cars per train 6 7-10. Wood was used for firing up.

Coal.	Eng. miles.	Evap. of water per lb. of coal.
No. 1	374	7.311
No. 2	561	5.827
No. 3	374	6.402
No. 4	374	6.269
No. 5	374	5.393
No. 6	748	5.482
No. 7	561	6.327

Average temperature of water in boiler 65° F.; average steam pressure in boiler, 130 pounds. The total engine mileage was 3366 miles and the average evaporation 6.002 pounds water per pound of coal. Each run was 187 miles. The coals used were:

No. 1—Best quality, Pittsburgh.
No. 2—Inferior quality, Pittsburgh.
No. 3—Alabama.
No. 4—Tennessee, near Chattanooga.
No. 5—
No. 6—Central Kentucky.
No. 7—

The difference in evaporation between the best and the poorest of these coals was 26 per cent. This will serve to show that our monthly reports of coal burned per mile and per car hauled are of no practical value for comparison except when the coal is of the same quality.

As the rule, it may be said that the area of "fire grate" should be the least on which we can burn the amount of fuel necessary to generate the amount of steam required. What its area should be will depend largely upon the coal used. Careful tests must be chiefly relied on to determine the proper modifications needed to adapt a fire-box to the kind of fuel to be burned. When bituminous coal rich in gas is to be employed, it is important that the fire-box should be large enough to give time for the perfect combustion of the gases before they enter the tubes, and that the heating surface be as great and the boiler as large as possible within the limits allowable.

A large quantity of water in the boiler gives proportionate capacity for stirring up heat—accumulating it when the demand for steam is comparatively light and giving it out as required, without causing the great variations in water pressure which occur when boilers are deficient in capacity. A large boiler, like a fly-wheel, accumulates power at times when it would otherwise be wasted, and responds to sudden demands for it, for a time at least, without much apparent diminution of its force.

As regards the material for boilers and the character of workmanship, there need not be any very great differences of opinion. All should be as nearly perfect as possible. A boiler which is strong enough may be said to be as strong as it is worth while to make it, no matter how constructed. But a boiler may be strong enough when new, and not strong enough when old and weakened by corrosion, unequal expansion, the springing of sheets and the strains from the attachments. Theoretically and practically our boilers are amply strong when new, but are weakened unduly by the causes noted. Tests by hydraulic pressure of boilers long in service, convinces one that the margin of safety between the ordinary pressure and that necessary to produce rupture is unpleasantly narrow in many old boilers in service. The base of the dome seems to be the weak point in many old boilers insufficiently braced. Much improvement has been made of late years in increasing the strength of boilers, but there is room for further improvement in that direction. Perhaps our English friends go too far, but I am satisfied that in some particulars English practice could with advantage be imitated here. As the rule, the metal in our boiler shells is not thick enough, lacking rigidity and stiffness rather than strength, though the shell is not as strong, in proportion, as other parts of the engine, and it is generally the first part to need repairs. Within a few years the diameter of large boilers has been increased about 22 per cent., while the thickness of plates has been increased only about 16 per cent. Considering that the strain pressures have also been increased to the extent of perhaps 8 per cent., the thickness of the shell of a 54-inch boiler should be ⅝ inch, to be in proportion to what was considered necessary when the 44-inch boiler was in general use.

The "Belpair" boiler, extensively used in foreign locomotives with good results, has thus far been but little used in this country; and when water which makes no scale is used, neither the Belpair nor any similar system would be likely to show much superiority over the common plan in evaporation or durability, if the crown bars are high enough above the sheet, say 1½ or 2 inches, to permit a free circulation; but with such water as is ordinarily used in this country, it would seem that the boiler having the least area of surface where deposits could form would be the best, other things being equal. A crown sheet stayed by bolts to the outer shell would receive only about one-third as much scale falling from the bolts and bracings directly over it as the one supported by crown bars; and as the detached scale falling from the crown bars and braces where the water is very impure is a troublesome and expensive matter, the question of reducing the "dead" surfaces, as they may be called, when these deposits are formed, is one worthy of more consideration than it has yet received.

LABOR AND WAGES.

The *Labor Tribune* has a letter from its St. Louis correspondent professing to give the action of the recent stove convention at Niagara Falls anent labor: "Throughout the two days the main question was with regard to labor, and more especially labor organizations—how to circumvent, encompass and suppress them. It was the pronounced opinion of the meeting that energetic steps should be taken toward restriction of output, and the introduction of the Filley style of production of botch molders. A committee of three was appointed to carry out the plan. To accomplish this latter contract the Filley semi-apprenticeship system will be introduced; that is, there will be an effort made in that direction. Mr. Filley's way of breaking a union is to hire a floor full of boys and put squads under journeymen teachers, producing in a few months full-blown molders, and castings equal in finish to that of the fresh batch of molders thus produced."

The Mt. Hickory Iron Company at Erie, Pa., have issued circulars to all the strikers, declining positively to accede to their demand, and stating that on July 5 contracts will be made for men to sign and return to work. Those unwilling to sign are warned to vacate the cottages adjacent to the rolling mill, they being the property of the company.

Senator Blair, of the Committee on Education and Labor, reported a substitute for the resolution directing an investigation into labor strikes. The substitute enlarges the scope of the proposed investigation by including the relations between labor and capital, wages and hours of labor, the condition of the laboring classes in the United States and their wages as compared with similar classes abroad, and the causes or agencies producing strikes. The Committee on Education and Labor is directed to make the investigation, and is empowered to sit during vacation, to visit different localities, to examine persons under oath, &c.

Mr. Laufman, of the Apollo (Pa.), Iron Works, which is running non-union, pays his respects to the Amalgamated Association in the following manner: "Find below two extracts from the *Labor Tribune*, of this week with my comments. 'What do the tools at Apollo think now when the men working in their neighboring mills (Leechburgh) are getting the prices in the district? Can you still continue to cut your own throats?'—*Labor Tribune*. The 'tools' at Apollo are lying around loose. The Apollo freemen are at work, making from $3 to $8 per day, with roast beef. Where are the 'Leechburg tools' now? The following also refers to the Apollo mill: 'Last Monday, the 26th ult., they broke the housen and the corner off the dovetail of the bed-plate on the large mill. As everything is satisfactory, this is too. If the breaking in of green hands was a profitable business other manufacturers undoubtedly would have realized the fact before this.'—*Labor Tribune*. True, we broke an old housen which was cracked, but our 'skilled' workmen broke 18 chilled rolls last year and about 6 this year up to the time they quit. How's that for 'skilled' workmen?" At the present writing we imagine Mr. Laufman is somewhat ahead.

The Knights of Labor have issued the following circular: *To the President of the Maryland and Clearfield Coal Exchanges:* The following was adopted jointly by the miners of the Georges Creek, Maryland, coal region, composing District 25 of the Knights of Labor, and the miners of Clearfield and Centre Counties, composing District 40 of the same order:

Resolved, That the Grand Executive Board of the Knights of Labor be requested to act as a conciliatory board to effect a settlement of the difficulties existing in the Georges Creek, Maryland, and Clearfield, Pa., districts, the districts having amalgamated. All correspondence tending towards a settlement to be sent to the Grand Executive Board of the Knights of Labor, through the Grand Secretary's office.

The above request has been complied with, and the board will act upon notification from the operators interested. R. D. Layton,
Grand Secretary Knights of Labor,
Lock Box 870, Pittsburgh, Pa.

The bituminous coal miners in Pittsburgh—the Cumberland and Clearfield regions—are in a state of ferment. At Pittsburgh the railroad coal miners are in the thirteenth week of the strike. Cumberland is still out. About half of Clearfield went out last week. Meyersdale and Elk Garden regions struck on Saturday for an advance of from 50 to 65 cents per ton. They also say they will not resume work until the advance asked for in the Cumberland region is granted. This action is the result of the combination formed at Bedford, Penn., on Thursday and Friday last. The miners in Weston, Penn., are appealing for aid. Secretary Flannery, through the Mahanoy (Schuylkill County) *Record*, has issued an appeal for aid to the miners of Luzerne, Schuylkill, Carbon, Northumberland, Columbia and Dauphin Counties. There are about 60,000 miners and laborers employed in the pits of these counties.

The men at Moorhead's Furnace, Pittsburgh, have submitted to a reduction of 25 cents a day.

The present labor troubles at Pittsburgh have called out a number of statements as to the earnings of labor. A "heater" sends the following to the Pittsburgh *Leader*: *Editor of the Leader*—In an editorial last evening and at different times lately there has been a great deal published about the wages of heaters and rollers, and there has been no correction from our side. The feelings of the public and press have been against us as finishers. Now, Mr. Editor, with your permission I will give you the exact figures, so you can make no mistake on the question. These figures are the wages paid at our bar mills, and are correct. The average output on bar mills in Pittsburgh per day is 15 tons (2240 pounds). Price per ton, 70 cents; two heaters, one roller on a job, each heater will make $5.25, out of which he will pay his helper from $1.50 to $2 per day. The roller will get $10.50 per day, and will pay rougher $3.25, and in summer a finisher $3 per day, which will leave him $4.25. Without the finisher he can make $7.25. Rollers have the most responsible positions in rolling mills, and serve from 10 to 20 years before they get a job like the one I am describing. You will please publish this from one who has worked in the mill from youth up, and is only a "heater."

It is 19 weeks since the Phœnix Iron Company's puddlers left the employ of that company in preference to resigning from the union. Many of the heaters who struck in favor of the puddlers' action have since returned to work, and almost daily others are preferring work to idleness.

The New York Iron and Metal Exchange.

The rooms of the "House of Commons" will be formally opened on Tuesday next, July 11, at 1 o'clock p. m. There will be some speechmaking, refreshments, of course, and perhaps music. The painting and decorating of the building, corner Burling Slip and Pearl street, is finished, and the furniture and carpets will be ready for the opening. Telephones and messenger calls have been put in, and the American Rapid Telegraph Company will have an office in the building. The rules are approaching completion, and on the day after the opening the daily calls will begin.

We have received for publication the following letter, which is designed to correct some of the rumors which have been put in circulation to the effect that seats in the Exchange are offered below par:

New York, July 5, 1882.

To the Editor of The Iron Age.—Sir: I understand there is a great difference of opinion as regards the value of Iron and Metal Exchange memberships. I hereby agree to pay $135, cash, each for as many certificates of membership as are delivered to me at my office on or before July 8, 1882.
Respectfully, Wm. Willis Merrill.

Mr. Merrill is an operator in exchange memberships at No. 4 Stone street. As his bid may be considered the first "call" of the exchange, we give it space—especially as it is not probable that any offers are expected by or before July 8th.

Mr. Stead, of Middlesborough, England, recently read a paper on "A Rapid Method of Estimating Phosphorus, and on Gas Analysis, with Remarks on the Combustion of Blast-furnace Gases," before the Cleveland Institution of Engineers. Mr. Stead, in advocating systematic examinations of blast-furnace gases, stated that he had occasionally detected that one-third of the gas passed unconsumed into the air, which was equivalent to throwing away almost 70 tons of coal per week for every blast furnace making 400 tons of pig iron.

During a recent thunder-storm lightning struck the electric-light pole in Union Square, New York, causing a brilliant flame to envelop the burners for a few seconds. The "accommodator" was broken, but no further damage was done. The light was not even put out.

1882. GOODELL CO.'S FRUIT PREPARING MACHINES. 1882.

POWER DUPLEX PARER, HAND DUPLEX PARER, EMPIRE STATE PARER, IMPROVED BAY STATE PARER, FAMILY BAY STATE PARER, WHITE MOUNTAIN APPLE PARER, WHITE MOUNTAIN POTATO PARER, LIGHTNING APPLE PARER.

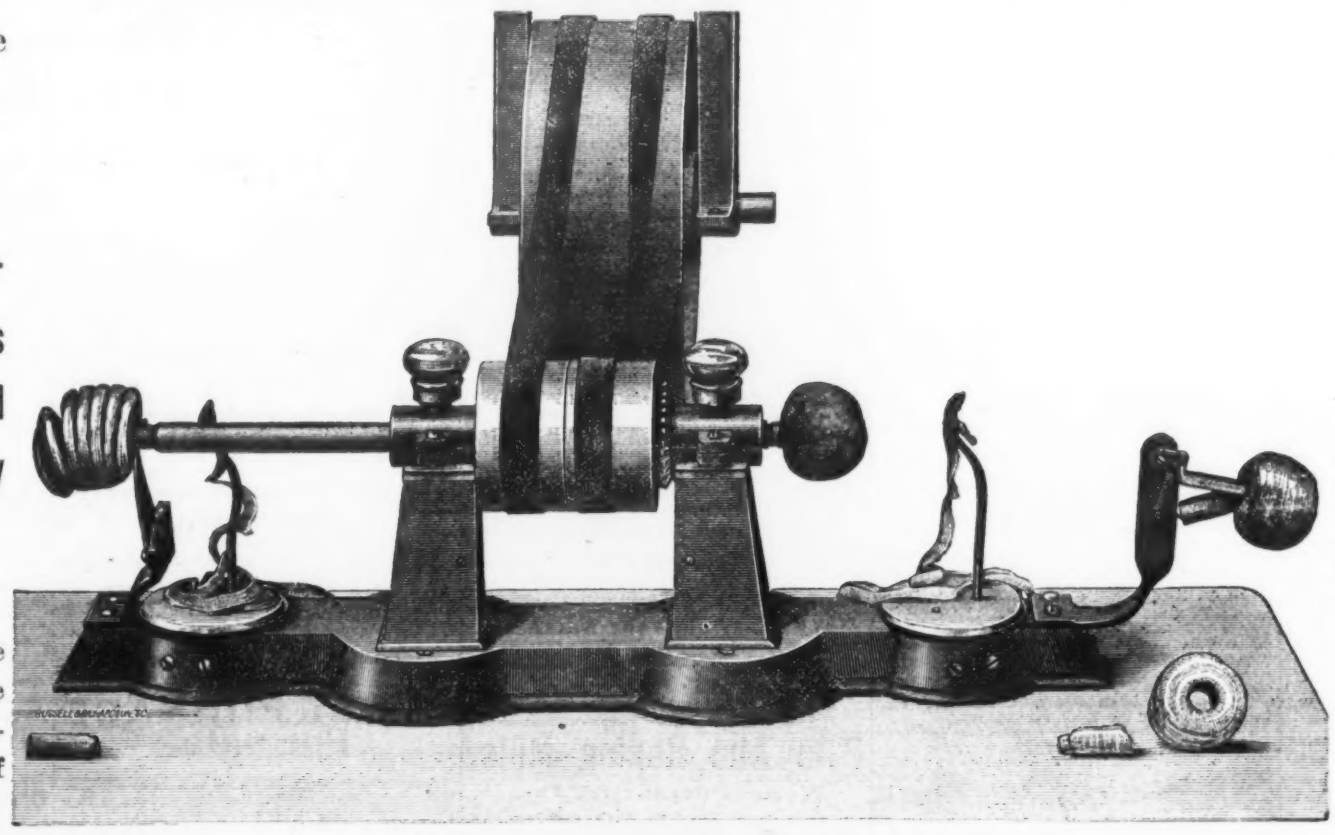
GOODELL CO., Antrim, N. H.,

SOLE MANUFACTURERS.

Power Duplex Apple Paring, Coring and Slicing Machine.

This Parer is a Marvel of Simplicity, and is Exceedingly Strong and Substantial in Every Part.

Since the Cut was made, we have inverted the Machine so that the Peelings fall entirely free from every part of the machinery.



POWER DUPLEX APPLE PARING, CORING AND SLICING MACHINE.

It is capable of Paring, Coring and Slicing

75 BUSHELS

OF

Apples

IN

10 HOURS.

And as the Apples are pared close at both ends, but very little trimming is required.

It has no rival in the perfection of its work and rapidity of its operation.

It can be used as a Parer, or a Parer and Corer, or a Parer, Corer and Slicer, as may be desired.

PRICE, $30.

THE IMPROVED BAY STATE APPLE PARING, CORING AND SLICING MACHINE.

THE IMPROVED BAY STATE

Apple, Paring, Coring and Slic'ng Machine.

PRICE, $3.

This Machine is intended for family use, and for Evaporating Purposes. The experience of years has suggested no improvements in the quality of the work performed by the "Old Bay State Parer." The only improvement is in the matter of Durability, and we have made this Machine remarkably strong in every point, with a Steel Screw, and so arranged as to drop Peelings and Fruit entirely free from the Machine. It is simple, substantial and durable.

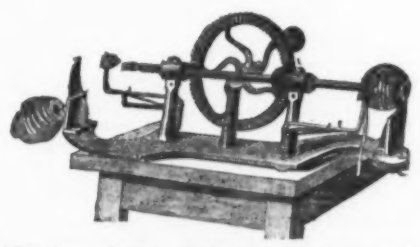
THE EMPIRE STATE PARING, CORING AND SLICING MACHINE.

THE EMPIRE STATE

PARING, CORING AND SLICING MACHINE.

This is an exceedingly strong Parer, has Steel Arbor and Screw, Babbitted Boxes. Peelings drop entirely free from machinery, and is in every way better than any parer made by any other party on earth.

PRICE, $10.



Duplex Apple Paring, Coring and Slicing Machine.—Price, $12.

We would most respectfully call your attention to the merits of the DUPLEX PARER, shown by the above Cut. Being confident that its simple and durable construction, its speed, precision, uniform good work, and its impossibility of getting out of order, will commend it to the Fruit Evaporating Men, and meet their wants. This machine is 26 inches long, 10 inches high, weighs 25 pounds, boxed. Its great advantage over other machines is the absence of all springs, weights, &c., to get it into position, as it is always ready; the use of the Plunger which pushes off the pared apple when the new one is put on, and keeps the pared fruit clean; the arrangement of knife by which large or small apples are pared alike.

FAMILY BAY STATE PARING, CORING AND SLICING MACHINE.

FAMILY BAY STATE

PARING, CORING & SLICING MACHINE.

This Parer is too well known to need description.

AND IS A

BETTER PARER

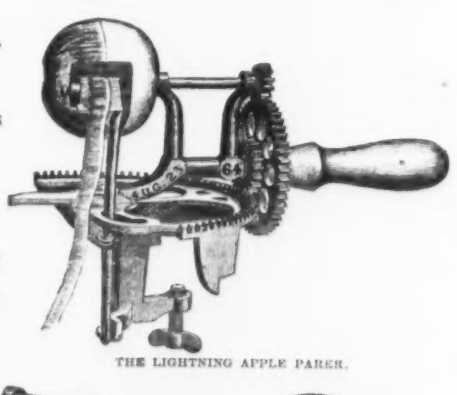
THIS YEAR THAN EVER BEFORE!

The Lightning Apple Parer.

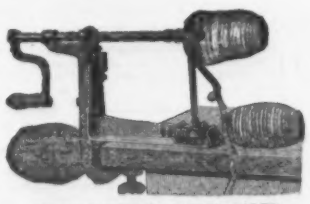
This Parer has stood the test for years, and has proved what was originally claimed for it, to be not only the most RAPID, but also the

BEST WORKING MACHINE IN THE WORLD!

Paring rougher apples and doing better work than any other machine in existence.



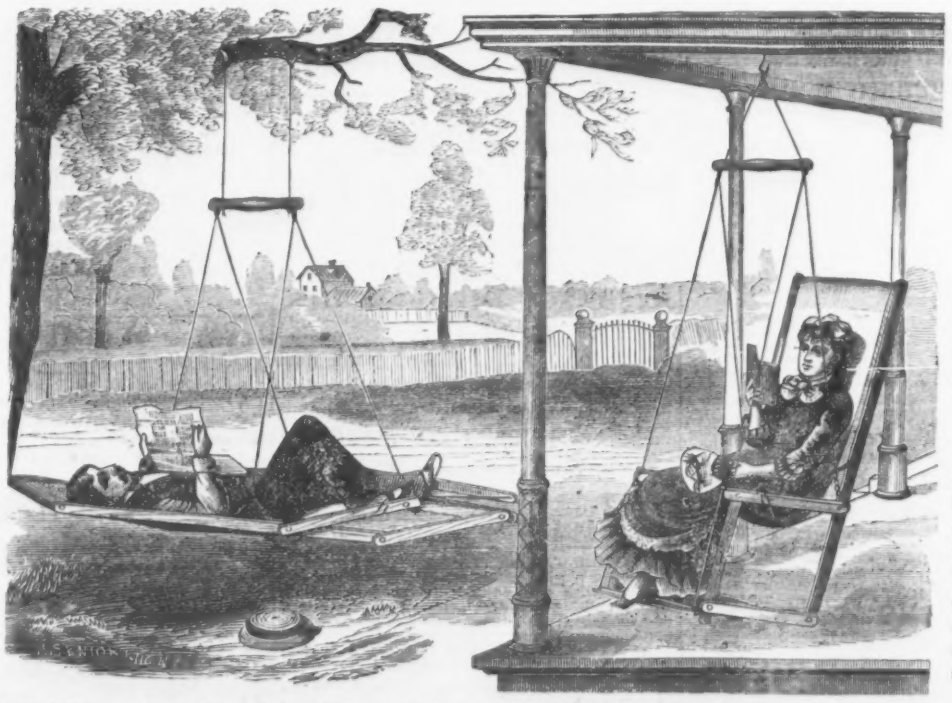
THE LIGHTNING APPLE PARER.

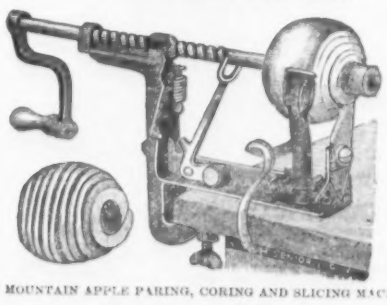


WHITE MOUNTAIN POTATO PARER.

WHITE MOUNTAIN POTATO PARER.

This is the only Machine ever made that will not only pare a potato much better than can be done by hand, taking off a thinner paring from every kind or shape of potato, but will go into and clean out the eyes. Almost any of the Potato Parers in the market seem as if they might do the work better next time, but the "White Mountain" does it now.





WHITE MOUNTAIN APPLE PARING, CORING AND SLICING MACHINE.

WHITE MOUNTAIN

APPLE PARING, CORING & SLICING MACHINE.

This is the simplest, strongest and best Paring Machine ever made for family use. When in operation it don't knock the pared apple in the dirt, or rattle like hail on a tin roof, yet it does all the work automatically—smooth and steady is the word—and all that is necessary is to put the apple on the fork, turn the crank, and the apple is pared, the core taken out—leaving the fruit all sliced in just the nicest shape you ever saw. NO LOSS! NO WASTE! But everything neat as a new pin. Why, even the core is taken off automatically, saving time, labor, and apple.

WHITE MOUNTAIN HAMMOCK CHAIR.

Special Notices.

New and Second-hand Iron Working
MACHINERY.

Two Engine Lathes, 42 in. x 16 ft. Triple Geared. Ames. New. July.
One Engine Lathe, 36 in. x 18 ft. Fifield. New. Aug. 1.
One Engine Lathe, 28 in. x 18 ft. Ames. New.
One Engine Lathe, 28 in. x 16 ft. Ames. New.
One Engine Lathe, 28 in. x 17 ft. Fifield. New.
One Engine Lathe, 28 in. x 21 ft. Fifield. New
Two Engine Lathes, each 24in.8ft.x10ft.-12ft.-14ft. New. Ames.
Three Engine Lathes, 20 in. x 12 ft. Ames. New.
Three Engine Lathes, 20 in. x 10 ft. Ames. New.
Three Engine Lathes, 20 in. x 8 ft. Ames. New.
One Engine Lathe, 20 in. x 10 ft. Jones& Lamson New
Two Engine Lathes, 18 in x 7 ft. Armsley & Harring ton. Good order.
One Engine Lathe, 16 in. x 6-7-8 ft. Bridgeport Mch. Tool Works, New.
Six Engine Lathes, 16 in. x 6 ft. 7 ft x 8 ft. Ames. New.
One Engine Lathe, 15 in. x 6 ft. with Turret. Flathers. New.
Two Engine Lathes, 14 in. x 6 ft. Star Tool Co. New.
Six Engine Lathes, 13 in. x 6 ft. Ames. New.
Two Engine Lathes, 13 ft. x 5 ft. Ames. New.
Six Hand Lathes, 12 in. x 5 ft. Hendey. New.
One Chucking Lathe, 24 in. x 48 in. New.
One Pulley Turning Machine, 26 in. x 36 in. New.
One Crank Planer, 12 in. Belden. New.
One Planer, 16 in. x 3 ft. Belden. New.
One Planer, 30 in. x 4½ ft. Putnam. Good order.
Two Planers, 20 in. x 4 ft. Morse Lathe and Tool Co.
One Planer, 24 in. x 6 ft. Good order.
One Planer, 24 in. x 6 ft. Ames. New.
One Planer, 37 in. x 10 ft. Second-hand. Good order.
One 6 in. Stroke Shaper. Boynton. New.
Two 9 in. Stroke Shapers Hewes & Phillips.
One 16 in. Stroke Shaper. Pratt & Whitney.
One 15 in. Stroke Shaper. Hendey. New.
Two No. 2 Profiling Machines. P. & W. A1.
One 20 in. Stroke Shaper. G. & E. New.
One 24 in. Stroke Shaper. Hendey. New.
One Screw Machine. No. 1. Wire Feed. P. & W.
One Screw Machine. No. 2. P. & W.
One Screw Machine. No. 3. P. & W.
One Screw Machine. New Pattern. Wire Feed. Secon.
Three 4 Spindle Drills. No. 2. Pratt & Whitney
One 6 Spindle Drill. No. 1. Pratt & Whitney.
One 20 in. Upright Drill. Prentiss. New.
Two 22 in. Upright Drills. Prentiss. New.
One 24 in. Upright Drill. Ames. New.
One 30 in. Upright Drill. Prentiss. New.
One 38 in. Upright Drill. New Haven. New.
Three Sensitive Drills.
One Die Sinker. Pratt & Whitney.
20 Lincoln Millers and vises. Good order.
One 10 lb. Air Hammer. Hotchkiss. Good order.
One 200 lb. Bradley Hammer. A1.
One 60 lb. Bradley Hammer. New.
Two 400 lb. Drop Hammers. Merrill. A1.
All sizes Bradley Hammers furnished to order promptly.

E. P. BULLARD, 14 Dey St., New York,
GENERAL EASTERN AGENT FOR
Akron Iron Co.'s Patent Hot Polished Shafting.

For Sale.

A Sturtevant Fan, 30 inch outlet; hight over all 7½ feet; warranted in perfect order. Price, $200, f. o. b. cars this city.
POPE IRON & METAL CO.,
St. Louis, Mo.

For Sale.

A Merchant Bar Rolling Mill, in perfect running order, now working; located on one of the principal Railroads in the eastern portion of the State of Pennsylvania. For full particulars address
RARE CHANCE,
Office of *The Iron Age*, 220 S. 4th St., Phila., Pa.

For Sale.

One of the largest Hollow Ware and Stove Foundries in the city of Philadelphia, which has been in operation for the last 38 years—one of the partners having recently died, and the remaining partner being desirous of getting out of business. All communications that mean business will receive prompt attention. Address
"S. C.,"
Office of *The Iron Age*, 83 Reade St., New York.

Shears For Sale.

POWER SHEARS for cutting Bar and Scrap Iron, 6 in. x ⅝ in., 2 in. x ¾ in., and 1¼ round or square, "Alligator" style, new. Net price, $310. Immediate delivery.
PEERLESS PUNCH AND SHEAR CO.,
38 W. Dey St., New York.

Wanted.

A thoroughly skilled Furnace Keeper for an anthracite furnace, competent to take charge of same as Founder.
Address T,
Office of *The Iron Age*, 83 Reade St., New York.

Office Manager.

A gentleman of means, 30 years of age, for 15 years active in business, and past 5 years has represented one of the largest eastern manufacturers, among the jobbing trade of New England and Middle States, desires an office position in city on small salary. Best references. Address
WM. SCOTT,
P. O. Box 1278, New York City.

Wanted.

Second-hand Plate Mill Housings, 2 high, suitable for 24-inch rolls. Also Pinion Housings, for 24-inch pinions.
Address
P. O. BOX 733,
Pittsburgh, Pa.

Wanted.

TWO 400 LB. DROP HAMMERS,
ONE 60 LB. BRADLY TRIP HAMMER.
Address, giving particulars,
BOX 1025,
Hartford, Conn.

To Hardware Men---Rare Opportunity.

The undersigned having determined, on account of ill health, to retire from business, offers for sale, on very advantageous terms, his entire stock of General Hardware, including the good will of the business, situate in the James D. Gill block, 959 Water Street, Meadville, Pa. This is an opportunity rarely presented, the business having been established over 30 years, and would not be offered but for the reasons above set forth. Address WM. GILL,
Meadville, Pa.

REDUCTION IN PRICE.
JENNINGS' DISCOUNT TABLES.
(2½ to 85⅞ and all the combinations.)
We find them correct and wonderfully "labor saving."—Sargent & Co., New York.
"Your discount tables are all you claim for them." T. W. Root, with Russell & Erwin Mfg. Co., Toledo, O.
Counting House Edition, postpaid.....$1.13
Pocket Edition, Cloth Bound, " 50
Pocket Edition, Paper Covers, " 40
Currency may be sent by mail at publishers' risk.
Address, S. H. JENNINGS, Deep River, Conn.

WANTED—A young man having thorough knowledge of the Iron Trade, implements, &c., bookkeeping and shorthand; good penman; highest references and testimonials as to character and ability, desires a position. Address
WILLIAM BENNER,
Camden Station, Baltimore, Md.

WANTED.—A power Shears that will cut 2½ inch square iron hot. Address with price,
W. A. WHEELER,
South Norwalk, Conn.

WANTED.—Situation by a young Englishman, in an Iron Works, as Superintendent, or some other position; has a thorough practical knowledge of puddling, rolling, &c. Good references can be given. Address BOX X,
Office of *The Iron Age*, 83 Reade St., New York.

Special Notices.

New and Second-hand
MACHINERY.
IN STORE, MAY 25.

One Screw Planer, 70 in. x 11 ft.
One Screw Planer, 34 in. x 14 ft.
One Engine Lathe, 22 in. x 12 ft. New.
One Engine Lathe, 17 in. x 8 ft.
One Engine Lathe, 17 in. x 9 ft.
One Engine Lathe, 16 in. x 6 ft. Blaisdell.
One Engine Lathe, 16 in. x 6 ft. Wood & Light.
One Engine Lathe, 13 in. x 5 ft.
Two Lathes, 14 in. x 4 ft. 6 in.
One Lathe, 14 in. x 4 ft. Hand.
One Lathe, 12 in. x 5 ft.
One Bench Lathe, 11 in. x 3 ft. 6 in.
Two Pratt & Whitney Gear Cutters.
One Pratt & Whitney Monitor Lathe,
One Profile Machine.
One Wood & Light Milling Machine, No. 4.
One large Index Milling Machine.
One Ames, 4 Spindle Drill.
One Crank Planer.
One 8 in. Stover Shaper.
One Burleigh Rock Drill, No. 4. New.
One Woodward Pump, No. 4. New.
One Woodward Pump, No. 3. New.
One Knowles Pump. Special. No. 7.
One Corliss Beam Condensing Engine, 30 in. x 72 in.
One Oscillating Engine, 15 in. x 10 in.
One Horizontal Engine, 11 in. x 24 in.
One Horizontal Engine, 9 in. x 16 in.
Two Horizontal Engines, 6 in. x 8 in.
One Baxter Engine, 6 H. P.
One Portable Engine, 8 in. x 12 in.
One Portable Engine, 8 in. x 10 in.
One Locomotive Boiler, 100 H. P.
Shafting, Hangers and Pulleys.
Fairbanks Scales.

J. Gray's Machinery Depot, 37 Dey St., N. Y.

Furnace Property
For Sale.

Will be sold at a low price. The Charter, Rights and Real Estate of the Bloomsburg Iron Co., together with such portions of the stock of materials and other personal property as purchasers may require. The real estate consists of two blast furnaces favorably known as the Irondale Furnaces, in good condition, steam engine, water power of 100 to 200 horse-power, lands with extensive iron mines, storehouse, numerous dwelling houses, R. R. tracks and sidings several miles in length (connecting the furnaces with both Canal and Railroad), canal wharves with tracks and facilities for receiving and shipping large quantities of freight with economy and dispatch, either by canal or railroad.
This property is situated at Bloomsburg, Pa., within 30 miles of the Wyoming Coal field.
The furnaces have been in continuous and successful use for 37 years. The Company own in addition extensive and valuable ore mines in Snyder Co., Pa.
All the property is in good order and now in profitable use. For further information apply to
CHAS. R. PAXTON, President,
Bloomsburg, Pa.

For Sale.

A first-class flourishing RETAIL HARDWARE BUSINESS, with a carefully selected stock of Mechanics' Tools, Builders' and Cabinet Hardware, in Jersey City, now rapidly growing. Stock $5000.
Inquire of H. LUTTGEN,
57 Montgomery Street.

LEIGH'S
DISCOUNT BOOK
Specially arranged for the use of the
HARDWARE TRADE.
Acknowledged by ALL the best work of the kind ever published. Price by mail ONE DOLLAR.
Address
E. B. LEIGH, St. Louis Elevator, St. Louis, Mo.

The Sherman Process Co.
9 Pemberton Square, Boston, Mass.,
Issue Licenses to use the Process for the Manufacture of Iron and Steel
In the Bessemer Converter, Crucible, Siemens Martin, Puddling, Blast and Cupola Furnaces.
The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working.
See page 17 of *The Iron Age* of Oct. 25th, 1877.

NEW ENGINE LATHES.

Ready for instant shipment; with modern improvements; 16, 17, 18 and 20-inch swing, by from 6 to 10-feet bed.
Call on or address
S. C. FORSAITH & CO.,
Manchester, N. H., or
209 Center Street,
N. Y. City.

Export.

An American of middle age, with a long business experience in Foreign countries, is making up a voyage to the East Indies, Australia, New Zealand and Cape Colonies, Africa, and will take a sample line of American hardware, machinery and specialties, if a sufficient number of responsible houses apply. Solid references given.
Address TRAVELER,
P. O. Box 452. New Haven, Conn.

Iron Furnace Wanted.

Parties having good trade in the Eastern States desire the exclusive agency for some furnace, making good foundry iron, for the sale of its product. Liberal advances made if required on iron. Address,
MERCHANT,
Office of *The Iron Age*, 83 Reade st., New York.

WANTED.—A situation as Superintendent or Manager of Blast Furnace or Ore Mine. Either Hot or Cold Blast Charcoal or Coke. Eleven year's experience. Best of references.
Address MANAGER, Box 7.
Office of *The Iron Age*, 83 Reade st., New York.

WANTED.—A position as general Mechanical Manager, by a man experienced in all the details of Stationary, Portable and Marine Engine and Boiler work, Pattern making and Foundry work, also experienced in designing and draughting all kinds of new machinery and estimating the cost and price, and in the systematic and economical management of help. Unquestionable reference offered. Address,
C. D., 57 East 6th Street, Oswego, N. Y.

WANTED.—A position by a thorough Hardware man, middle aged, connected for a long time with a large Mfg. Co. in this city—Co. now retired. Have filled the following positions in the ablest manner: Bookkeeper, Cashier, Office Manager, Purchaser, Salesman in house and traveling. Personally acquainted with and visited all the leading houses in the U. S. Have also held the position of Sec. Have the best testimonials and a good record Moderate and reasonable as to salary. Will take any position I have named. Can sell as many goods for a leading Mf.'s as any one in the U. S. Address,
HARDWARE, 56 East 131st Street, New York.

PUNCHING PRESS AND SHEARS FOR SALE.—New Boilermaker's Punching Machine, 24-inch throat. Punches 3-4 hole in ¾ iron. Also Power Shears, cutting 3-4 plate-iron 27 or 36 inch throat. Also larger sizes, single and combined. PEERLESS PUNCH AND SHEAR CO. 38 W. Dey Street, New York.

Special Notices.

SECOND-HAND AND NEW
MACHINERY.
JUNE 15, 1882.

The following new and improved Machinists' Tools are part of what we have for early delivery:
1 30 in. x 30 in. x 8 ft. Planer. New. June.
1 42 in. swing, 16 ft. bed New Engine Lathe. June.
1 42 in. swing, 20 ft. bed New Engine Lathe. June.
1 36 in. swing, 12 ft. bed New Engine Lathe. June.
1 22 in. swing, 13½ ft. bed Engine Lathe. June.
3 19 in. swing, 10 ft. bed Engine Lathes. June.
1 11 in. Shaper, 25 in. Traverse. June.

The following on hand.
2 30 in. swing, 18 ft. bed Engine Lathes. New.
1 26 in. swing, 16 ft. bed Engine Lathe. New.
1 26 in. swing, 14ft. bed Engine Lathe.
4 22 in. swing, 12 ft. bed Engine Lathes.
2 19 in. swing, 8 ft. bed Engine Lathes. New.
2 18 in. swing, 8 ft. bed Engine Lathes. New.
1 18 in. swing, 8 ft. bed Engine Lathe. Tilting carriage.
1 18 in. swing, 11 ft. bed Engine Lathe. Tilting carriage.
1 12 in. swing, 4 ft. bed Engine Lathe. New.
1 15 in. swing, 9 ft. Hand Lathe. New.
3 12 in. swing, 6 ft. Hand Lathes. New.
1 10 in. swing, 4½ ft. bed Hand Lathe. New.
1 26 in. x 26 in. x 6 ft. Planer. New.
2 26 in. x 6 ft. Iron Planers. Second hand.
2 38 in. swing Upright Drills. B. G. & S. F. New.
1 26 in. Drill. B. G. & S. F. New.
2 20 in. Drills.
1 18 in. Bench Drill.
1 2-spindle Drill. New.
1 4-spindle Drill. New.
1 2-spindle Drill. Second-hand.
1 3-spindle Drill. Second hand.
2 4-spindle Drills. Second-hand.
2 Wall Drills, heavy. Second-hand. 60 and 72 in.
2 12 in. Shapers. New.
1 15 in. Shaper. New.
1 Pratt & Whitney Hand Miller.
1 Sellers Milling Machine. Second-hand.
1 Face Milling Machine. 2d hand.
1 Pond's Double Milling Machine. Second-hand.
1 No. 2 Screw Machine. New. Turrett Head.
1 No. 2 Screw Machine, wire feed. New.
1 No. 1 Brown and Sharpe Screw Machine. 2d-hand.
1 Screw Head Slotter. Second-hand.
3 Second-hand Profiling Machines.
2 4½ in. Hyde's Patent Centering Machines. New.
1 Emery Grinder. Second-hand, for 10 in. Wheels.
1 Pipe Cutting Machine. Second-hand. 2 in.
1 Bolt Pointing Machine. Second-hand.
1 Double Nut Tapper. New. Horizontal.
1 Horizontal Boring Machine, 10 in. swing. 2d hand.
1 Betts No. 2 Power Punch. New.
4 Double-Acting Presses No. 3. Nearly new.
4 Single-Acting Presses for power. Nearly new.
100 Foot Presses. Nearly new.
1 Medium Power Punching Press. Second-hand.
2 Small Power Punching Presses. Second-hand.
1 Foot Punch with bench. New.
1 Lot Pistol Machinery. Second-hand.
2 Grindstones and Frames. New.
1 Steam Hammer. Cylinder 6½ x 12. Second-hand.
Lot of Forges. 1 Slat Tenoner. 1 Railway Saw Bench,
1 Foot-power Circular Saw.
Cold-rolled Shafting, Pulleys, Hangers, Couplings, &c. always in store.

The George Place Machinery Company,
121 Chambers and 103 Reade Sts.,
New York.

For Sale.

Palo Alto Rolling Mills,
Near Pottsville, Pa.,
ON THE MAIN LINE OF THE POTTSVILLE AND READING RAILROAD.

These mills are in good repair, and can be started in two days' time.
Rolls for T-Rails 12 to 70 lbs. per yard, and for Street Rails 28 to 70 lbs. per yard.
Guide Mill Train for Merchant Iron ¼ to 1 inch.
Rolls for Merchant Bar, round and square, up to 4½ inches.
Number of Puddling Furnaces in both mills, 30; Heating Furnaces, 9; all with boilers attached.
Also Foundry, Machine Shop, Blacksmith Shops, Iron House, Roll House, Carpenter and Pattern Shops, Stables, handsome Dwelling for Superintendent, 11 Tenement Houses, a Brick Office, and ample grounds for stock and cinder.
For further particulars address
Messrs. LEE & McCAMANT, Extrs.,
Pottsville, Pa.
THOS. F. WRIGHT, 1804 Race St., Philadelphia, Pa.
HUGH W. ADAMS, 56 Pine St., New York.

DESIRABLE MANUFACTURING SITE
For Sale or Rent.

Being the extensive property formerly occupied by the
BUFFALO IRON AND NAIL WORKS AT BLACK ROCK, IN THIS CITY.
The buildings cover over three acres, and are of brick and wood, substantially constructed, and with slate roofs. They could easily be changed, if necessary, to suit almost any kind of business.
☞ Water and railroad communication to all parts of the country.
Maps of the property, with full description, sent on application.
P. P. PRATT or F. L. PRATT,
Buffalo, N. Y.

For Sale.

Two Corliss Condensing Beam Engines,
32 in. x 72 in. cylinders. Address,
THE HARTFORD ENGINEERING CO.,
Hartford, Conn.

E. BISSELL & CO.,
Wholesale Hardware Auctioneers,
83 Chambers and 65 Reade Sts., N. Y.
Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and importers.

IRON AND METAL
Exchange Memberships
Bought and Sold by
WM. WILLIS MERRILL,
4 Stone Street, Room 69.
Dealer in
EXCHANGE MEMBERSHIPS.

Wanted.

Superintendent for Malleable Iron Works. One familiar with the running of a Blast or Air Furnace preferred.
Address, with references and particulars,
M. I. W.,
2116 Market St.,
St. Louis, Mo.

WANTED,—A position to superintend Brass or Iron Works. Am a practical mechanic, and familiar with Engine, Machinery, and general Brass work, especially Kerosene goods. Have had successful experience in getting up tools and management of men. Address
W. O. LINCOLN, Bridgeport, Conn.
PHILADELPHIA, June 12th, 1882.

TO MANUFACTURERS.—A gentleman who has an office in New York, is desirous of representing goods suitable for the Hardware and House Furnishing Goods Trades
Address MANUFACTURERS' AGENT,
Office of *The Iron Age*, 83 Reade St., New York.

Special Notices.

NEW IRON WORKING MACHINERY.

ENGINE LATHES.
One 38 in. swing, triple-geared (bed made to suit). Fitchburg. June delivery.
One 21 in. swing, x 14 ft. bed. Blaisdell. On hand.
One 20 in swing, x 14 ft. bed. Fitchburg. On hand.
One 20 in. swing, x 12 ft. bed. Fifield. On hand.
Two 17 in. swing, x 6 ft. bed. Johnson. On hand.
Two 16 in. swing, x 6 ft. bed. Fitchburg. On hand.
Two 16 in. swing, x 8 ft. bed. Fitchburg. On hand.
One 19 in. swing, x 10 ft. bed. Gray. On hand.
Four 14 in. swing. x 6 ft. bed. Fitchburg. On hand

PLANERS AND SHAPERS.
One 25 in. x 25 in. x 8 ft. Fitchburg. On hand.
One 30 in x 30 in. x 10 ft. Hewes & Phillips. On hand.
One 30 x 30 x 8 ft. Fitchburg. On hand.
One 10 in. stroke shapers. Fitchburg. June delivery
Two Shapers, 10 and 15 in. stroke. Gould. On hand.

DRILL PRESSES, &c.
60 in. radial drill, first-class make, extra heavy bed plate and table. Weight 4 tons. On hand.
One 48 in. radial drill, self-feed, double gearing and slotted and planed bed. Betts Machine Co. On Hd.
Two 30 in. swing, back-geared Prentice. June del'ry.
Two 25 in. swing, back-geared, Fitchburg. On hand.
Three 18 in. swing. Fitchburg. On hand.
One 15 in. swing x 6¼ ft. bed. Fox Lathe. Gage. On h'd.
12 in. stroke Slotting Machine, Hewes & Phillips. On hand.
24 in. Gear Cutter, Gould. On hand.

KELLY & LUDWIG,
49 & 51 N. 7th St., Philadelphia, Pa.

For Sale.

9 in. Merchant Mill, 56 Rolls.
18 in. Merchant Mill, 6 ft. Rolls.
Tilt Hammer for Blooms.
2 48-in. Reynolds Turbines.
Lever Shears, Cam motion.
Crocodile Squeezer.
Heavy Roll Lathe, with small auxiliary Lathe.
14 in. x 14 in. Vertical Engine in Perfect Order.
A. G. BROOKS & WINEBRENER,
261 N. 3d St., Philadelphia.

For Sale.

Hardware Store. One of the best stands in Pennsylvania. Old-established trade of from $20,000 to $30,000 per year. Stock very clean, and best reasons given for selling.
Address
C. B. O.
Office of *The Iron Age*, 83 Reade St., New York

For Sale.

4 Noiseless Vertical Engines, 8 x 8 Cylinder. New.
1 Vertical Engine, 8 x 10 Cylinder. Second Hand.
1 20 H. P. Vertical Tubular Boiler; cast-iron base plate; all complete; in good order. Second Hand.
1 12 H. P. Vertical Tubular Boiler; cast-iron base plate; all complete; in good order. Second Hand.
F. B. BANNAN,
STEAM HEATING AND BRASS WORKING,
Pottsville, Schuylkill Co., Pa.

BLAST FURNACE
For Sale.

A first-class chance is offered to a party with ten thousand dollars capital desiring to engage in a Furnace Business with a capacity of 15 tons Pig Iron daily. Located in Central Pennsylvania. Coke, Limestone and Ore in immediate vicinity.
Address, BOX 224, BELLEFONTE, PA.

For Sale Cheap.

A 10-TON POWER ELEVATOR,
As good as new; built by Whittier Machine Co.; used for a short time by the New York Steam Engine Co.
JOSEPH LUMLEY,
144 N. 3d St., Philadelphia, Pa.

For Sale.

A nice, clean stock of Hardware and Agricultural Implements, with lease of room, in a town of 4000 inhabitants.
For particulars address
106 N. MAIN ST.,
Dayton, Ohio.

For Sale.

New 8 x 8 High Speed Engine, with governor; all complete; will indicate 30 Horse-Power; $187.50.
New 10 x 10 High Speed Engine, no governor; will indicate 45 Horse-Power; $250.
New 23½ in. swing, 14 ft. bed, Engine Lathe, with compound rest, power cross feed, rod and friction feed, and all the late improvements; $650.
New 28 in. Upright Drills, modern design; $200.
S. M. YORK, Cleveland, Ohio.

For Sale.

The Industrial Works of Shamokin, owned and successfully carried on for a number of years by the late Wm. Brown, deceased, consisting of Foundry and Machine Shop, and a large stock of Patterns regarded as part of the property. Boiler Shop, Blacksmith Shop and Factory for the manufacture of heavy coal screens. Well located in the borough of Shamokin, Pa., with the best facilities for shipping by rail, and surrounded by a district contributing all the work that a shop of that kind can possibly turn out. The works are now running, but in a very short time possession can be given. Easy terms of payment are offered to suit a purchaser of limited capital
Offered for sale by
WM. McILVAIN & SONS,
Reading, Pa.

For Sale.

One pair good, sound CHILLED ROLLS, 25 in. x 60 in., made by A. Garrison & Co., Pittsburgh. No use for them.
Also a HEATER, 18 in. x 60 in., with 21 2-inch tubes. Been used some. Will sell cheap.
CHAS. HUSTON & SONS,
Coatesville, Chester County, Pa.

Machinery For Sale. (ALL NEW).
One 20-in. Power Drill Press. Three 20-in. Davis Power Drill Presses. Six Hand Blacksmith Drills. Three Gear Cutting Attachments for Lathes. Twelve Assorted Chucks, 4 in. to 18 in. One Bolt Cutter, ¾ in. to 1¼ in. Three Barnes Lathes. Six Hand Shearing and Punching Machines. Two Sturtevant Blowers. Also, one second-hand Horizontal Engine, 12 x 24. One second-hand Horizontal Engine 10 x 16. JACKSON & TYLER,
16 and 18 S. Howard St., Baltimore.

Wanted.

A Partner with $5000 to $10,000 in a Foundry and Machine Business, established in 1824. For particulars, inquire of
I. H. COLLER,
Poughkeepsie, N. Y.

Wanted.

A situation by a practical Guide or Bar Mill Roller.
Address, P. T. P., Box 395,
Nashua, N. H.

WANTED, by a pushing young man, a position as Commercial Traveler to represent a good house through Pennsylvania, Ohio, Kentucky and Indiana. Has had three years' experience on the road: thorough knowledge of the razor and cutlery branches, also hardware. "JAMIESON."
Office of *The Iron Age*, 83 Reade St., New York.

DRILL PRESS FOR SALE.—New Upright Power Drill Press, swings 21 inches, back geared, quick return motion, steel spindle and shaft superior finish; weight, 1100; hight, 9 feet; price, $210.
PEERLESS PUNCH AND SHEAR CO.,
38 W. Dey St., New York.

Special Notices.

JOB LOT.
ELEY BROTHERS'
GENUINE BLUE CARTRIDGE CASES,
Twelve Gauge.
The best paper shell in the market. For sale cheap. Supply limited.
ALFRED FIELD & CO.,
93 Chambers St., N. Y.

ROBERT R. HAYDOCK & CO.,
AUCTIONEERS,
No. 75 Murray Street, New York,
SOLICIT CONSIGNMENTS OF
HARDWARE, CUTLERY, &c.

FOR SALE OR TO RENT.

New, light Factory; 70,000 floor feet; 275 H. P. Corliss Engine, giving power at minimum cost.
Shafting, piping, elevator, &c., all complete and modern. Lowest insurance rates. Railroad siding and ample yard room. Immediate possession.
A large quantity of General and Specia Machinery at low prices.
SHARPE RIFLE COMPANY,
Bridgeport, Conn.

For Sale.

Stock of hardware, stoves and implements, and store furniture, in one of the best towns in Kansas.
Address HARDWARE,
Box 366, Salina, Kansas.

Manufacturing Property for Sale.

The Real Estate of the late Foundry and Machine Company of Taunton, Mass. Buildings consist of Foundry, Machine, Erecting and Blacksmith Shops, and covering about 60,000 square feet of ground. For particulars apply to
THE GEORGE PLACE MACHINERY AGENCY,
121 Chambers St., New York.

DESIRABLE FACTORY PROPERTY
For Sale.

Being the Mills formerly occupied by Slade Woolen Co., Ansonia, Conn.
The buildings consist of the Main Mill 162 x 50 feet, 4 stories; and 3 outbuildings, as follows:
One 50 x 100, 1 story. Brick.
One 50 x 60, 3 stories. Brick.
One 26 x 52, 3 stories. Stone.
Also Barn and one Double Tenement on property.
80 H. P. Engine, Harris-Corliss make.
180 H. P. Boilers, with shafting, pulleys, &c.
The lot, about 2 acres, is on R. R. track, well situated near Depots and P. O.; 2 lines for freight to N. Y.; only 2½ hours by rail to N. Y.
For further particulars address
CHAS. L. HILL,
Ansonia, Conn.

For Sale.

A well-established, growing Hardware and Stove business at Hot Springs, Ark. Clean stock.
Address LOCK BOX 415.
Little Rock, Ark.

For Sale.

Second-hand
DROPS and LIFTERS.
BEECHER & PECK,
Lock Box 192, New Haven, Conn.

For Sale.

Horizontal Engines, 16 x 42 (Hewes & Phillips), with cut-off; 16 x 36 (Currier), with cut-off; 16 x 28 Upright Engine, with cut-off; one 80 H. P. Locomotive Boiler; one 4-ton "Otis" Freight Elevator; one 50 H. P. Horizontal Tubular Boiler. All the above guaranteed complete and in perfect order.
For particulars address
BELCHER & BAGNALL,
40 Cortlandt St., N. Y.

FOR SALE.
One Horizontal Engine, 36 in. x 48 in.
One Horizontal Engine, 24 in. x 60 in.
One Horizontal Engine, 23 in. x 36 in.
One "Corliss" Horizontal Engine, 18 in. x 48 in.
Two Horizontal Engines, 30 in. x 60 in.
Two Horizontal Engines, 26 in. x 36 in.
Two Link-motion Engines, 18 in. x 40 in.
One Upright Engine, 28 in. x 30 in.
Housings, Pinions and Bed Plate suitable for 18 in. train.
JOHN CARROLL,
264 and 266 Water Street.

Hardware Business For Sale
In Western New York.
Stock of hardware, stoves, tinware, etc., in elegant brick store; three new railroads now building, and trade rapidly growing. A good party wishing a fine business will do well to investigate.
Address W. W., Box K,
Office of *The Iron Age*, 83 Reade St., N. Y.

FOR SALE LOW.—ENGINE.

A Vertical High-Pressure Steam Engine, complete. Cylinder, 24 in. by 48 in. Built by A. J. Sweeney & Son. Can be seen in daily use at our nail factory.
LA BELLE IRON WORKS,
Wheeling, West Va.

For Sale Cheap.

One large Power Drop Press. Also one Foot Press, and one Arch Screw Press.
R. C. PURVIS,
Rear 407 Cherry St., Phila.

FOR SALE OR FOR RENT.

A complete Rolling Mill and Blast Furnace, favorably located, with easy access to Pennsylvania Railroad and to Philadelphia and Reading Railroad,
For further particulars, address,
P. O. BOX 545,
Harrisburg, Pa.

Trade Report.

BRITISH IRON AND METAL MARKETS.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, July 5, 1882.

Scotch Pig.—Prices have fluctuated in both directions during the week, but the market is now strong, and there is a large business doing. As compared with last week there has been an advance of 1/ in Eglinton, 6d in Coltness and Carnbroe, and a fall of 6d in Summerlee. The following are to-day's prices for No. 1 brands:

Langloan, alongside, Glasgow			60/6
Coltness	"	"	62/
Gartsherrie	"	"	60/6
Summerlee	"	"	58/6
Carnbroe	"	"	53/6
Glengarnock	"	Ardrossan	53/
Eglinton	"	"	51/6

Lighterage from Ardrossan to Glasgow is 2/ @ 2/6 per ton.

Cleveland Pig.—A large business has been done during the week under a brisk demand, and prices are firm. We quote as follows, f. o. b. shipping ports:

Middlesboro'	No. 1	Foundry	47/6
"	No. 2	"	45/6
"	No. 3	"	43/6
"	No. 4	Forge	43/

Bessemer Pig.—During the week prices have advanced, and the market closes strong with a good business doing. Mixtures of equal parts Nos. 1, 2 and 3 W. C. Hematites, are quoted 55/ @ 56/6.

Blooms.—The market is flat and there is practically no business doing. We quote, nominally, Bessemer, 7" x 7", £4. 12/6 @ £4. 15/.

Manufactured Iron.—The demand has improved, and the market is active and prices are firm. We quote as follows:

		£	s.	d.	£	s.	d
Staff.	Ord. Marked Bars	7	0	0 @	7	10	0
"	Medium "	7	0	0 @			
"	Common "	6	0	0 @			
Hoops, 20 W.G. & over.							
"	Common Best	8	0	0 @	8	10	0
"	Medium	7	0	0 @	7	5	0
"	Common	6	10	0 @	6	15	0
Sheets, 20 W.G. & under.							
"	Ordinary Best	8	10	0 @	9	0	0
"	Common	8	0	0 @			
Welsh Bars		5	7	6 @	5	10	0

Steel Rails.—There is a noticeable improvement in the inquiry for Steel Rails, though actual transactions have been small. Ordinary sections are quoted, nominally, £5 @ £5. 10/, f. o. b. shipping ports.

Iron Rails.—There is very little inquiry or business to report. Quotations are nominal. Welsh are quoted, 30 pounds and upward, £5. 5/, f. o. b. shipping ports.

Old Rails.—The market is dull, with few offerings and no sales. Old Tees are quoted £3. 15/ @ £3. 17/6, and Old D. H.'s., £4. 2/6 @ £4. 5/, c. i. f. New York.

Scrap.—There is no change to report, the market ruling quiet, with small offerings. Heavy Wrought is quoted £3. 12/6, @ £3. 15/ c. i. f. New York. Bessemer Crop Ends, run of the mill, are quoted 60/, f. o. b. shipping port.

Copper.—The market is quiet, with moderate inquiry and small business. Prices are steady. Best Selected is quoted £72 @ £72. 10/, and Chili Bars, £66 15/ @ £67.

Tin.—The market continues quiet, and prices still tend upward. Transactions are fair. We quote: Straits Tin, spot, £99. 15/ @ £100, and futures, £100 @ £100. 15/.

Tin Plates.—The demand continues good and prices are firm. We quote as follows:

Tin Plates, 10 x 14,	1st qual.	Charcoal	21/	@	24/
" "	2d "	"	19/	@	....
" "	1st "	Coke	15/	@	16/6
" "	2d "	"			15/9

Spelter.—The demand remains light and prices have drooped a little. We quote Ordinary, at shipping port, £16. 12/6 @ £16. 17/6.

Lead.—There is no change to note. The market continues quiet with light demand. English Common Pig is quoted £14. 5/ @ £14. 7/6.

Freights.—Steam from Glasgow to New York, 10/; ditto from Liverpool to New York, 10/ @ 12/6; Liverpool to Philadelphia, 14/ @ 16/6.

FINANCIAL.

OFFICE OF THE IRON AGE,
WEDNESDAY EVENING, July 5, 1882.

The week under review has been without any exciting event in trade circles. As natural to the season, the markets have relapsed into dullness, especially under the influence of holiday leisure. The stimulating effect of the large disbursements of money from the public treasury and on dividend account is as yet hardly appreciable. The former amounts to more than $21,000,000, including $11,000,000 in matured bonds, and it is calculated that, taking into the account semi-annual interest and dividends, the aggregate sum released July 1 for reinvestment exceeds $60,000,000.

To-day's steamers took no specie, and the present dullness of the market for foreign exchange indicates no early date for a resumption of specie shipments. To-day the rates were again reduced, the leading drawers putting their posted rates for demand bills down to 4.88½, with actual rates at 4.84½ @ ¾ for 60 days and 4.87½ @ ¾ for demand.

Money is easy on call at 3 @ 3½ %, and the market for commercial paper is good, particularly for first-class names. We quote 60 to 90 days indorsed bills receivable, 4½ 5 %. Four months acceptances, 4¾ @ 5¼; four to six months single names, 5½ @ 6½.

On the Stock Exchange during the week under review the market has been dull, but prices were generally firm. Toward the close some disturbance was caused by the calling in of loans preparatory to the July disbursements, which tended to unsettle the money market, but the temporary squeeze had no more than a transient effect. The first rumors of the lamentable accident near Long Branch caused a decline in New Jersey Central, but the recovery was immediate. On Saturday it was announced that General Palmer had negotiated in London $10,000,000 of Mexican National first mortgage bonds, which would provide funds for the completion of the railroad from Laredo to the City of Mexico, of course, having its influence in the rate of foreign exchange. On Monday the unfavorable semi-annual reports of the Lake Shore and the Michigan Central roads had a slightly depressing effect. To-day dullness continued, but with a strong undertone, due to the ease in money and favorable crop reports. Another Treasury call, within a few days, for $15,000,000 extended 6's is spoken of. Taking the week through, there is recorded an advance in prices ranging from the smaller fractions to 2 @ 2¼ % in exceptional instances, the latter Northwesterns. The stocks at all active to-day were: Louisville and Nashville, 67⅞ @ 64¾; Lake Shore, 109¼ @ 108¼; Jersey Central, 77¼ @ 75¼; Denver and Rio Grande, 56½ @ 55½; Western Union Telegraph, 85½ @ 84⅝; Texas and Pacific, 44⅝ @ 43⅝; Kansas and Texas, 34⅝ @ 33¾; Reading, 57⅝ @ 96⅞; Northern Pacific, 41¼ @ ¾; ditto preferred, 78¾ @ 79⅝; and Delaware, Lackawanna and Western, 127¼ @ 128. Delaware, Lackawanna and Western was this afternoon quoted ex-dividend of 2 %.

The freight handlers' strike is apparently near a collapse, as most of the railroads have reduced the accommodations in their freight houses, and the newly engaged laborers are becoming accustomed to their work. This difficulty settled, the transportation companies will anticipate a more profitable business, from the increased movement of tonnage on an advanced schedule of freight charges, which went into effect July 1st. The promise of a bountiful harvest is fully borne out by the latest accounts.

The exports of domestic produce from this port during the past week were unusually light, the total being $4,940,319, against $7,059,549 same week last year. The shipments of petroleum, provisions, breadstuffs and cotton were all below the usual average. Since January 1 the total is $158,555,097, against $192,613,986 for the corresponding period of 1881. The first bale of new cotton is *en route* from Texas.

The Senate this afternoon voted to postpone till December next the consideration of a national bankrupt law.

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. 6's, '81, continued at 3½	100½	101
U. S. 5's, '81, continued at 3½	100¾	101
U. S. 4½'s 1801 registered	114	114¼
U. S. 4½'s 1891 coupon	114	114⅝
U. S. 4's 1907 registered	118¾	119
U. S. 4's 1907 coupon	118¾	119
U. S. Currency 6s 1895	129	—
U. S. Currency 6s 1896	130	—
U. S. Currency 6s 1897	131	—
U. S. Currency 6s 1898	132	—
U. S. Currency 6s 1899	133	—

State stocks through the week have been firm, but dull. The only sale to-day was $3000 Alabama, Class C, at 84.

The following is an analysis of the bank totals of this week compared with that of last week:

	June 24.	July 1.	Comparisons.
Loans	$318,716,800	$322,884,300	Inc. $4,167,500
Specie	58,957,600	56,124,500	Dec. 2,833,100
Legal t'd'rs	26,546,400	25,648,800	Dec. 897,600
Tot. reserve	85,504,000	81,773,300	Dec. 3,730,700
Deposits	304,491,000	305,369,100	Inc. 878,100
Reserve required	76,122,750	76,342,275	Inc. 219,525
Surplus	9,381,250	5,431,025	Dec. 3,950,225
Circulation	18,502,800	18,468,900	Dec. 93,900

The bank return for the week shows a loss of $3,950,225 in surplus reserve, which now stands at $5,431,025 above, against $6,911,300 above at this time last year, and $16,083,625 for the corresponding date in 1880.

The importations of specie and bullion at this port during the week ending June 30th were $31,847, consisting of $21,514 in gold, and $10,333 in silver, as against a total of $78,795 for the week ending July 2d last year. The importations since the 1st of January and since the 1st of August compare as follows with the movement during the corresponding periods last year:

	Since January 1—	
	1882.	1881.
Gold	$590,040	$28,196,386
Silver	1,352,466	1,572,437
Total	$1,942,506	$29,768,823
	Since August 1—	
	1881-82.	1880-81.
Gold	$25,136,326	$96,475,354
Silver	2,395,641	4,043,788
Total	$27,531,967	$100,519,142

MINING STOCKS.

The following were the closing quotations for mining stocks:

	Bid.	Asked.
American Flag	4	....
Amie	20	21
Alice	....	2.60
Alta Mont	....	70
Belle Isle	67	....
Bodie	3.75	5
Buckeye	3	....
Bulwer	1.75	1.95
Bassick	....	7½
Bull Dom	10	15
Boston C	19	22
Big Pittsburgh	50	....
Bradshaw	5	....
Calaveras	....	11
Cale. B. H	50	60
Consolidated Imperial	3	5
Consolidated Pacific	20	30
Consolidated Virginia	50	....
Chrysolite	3.50	3.60
Cent. Ariz	....	80
Cherokee	30	39
Dahlonega	2	3
Durango	....	13
Decatur	....	1.10
Empire-Utah	1.75	1.80
Eureka C	15	....
F. De Smet	6	....
Great Eastern	4	....
Green Mountain	2.25	2.40
Gold Str	....	47
Hukill	35	40
Horn Silver	10⅛	....
Hibernia	10	12
Hortense	16	....
Independence	33	37
Iron Silver	1.95	2.00
Lacrosse	14	16
Leadville Con	65	75
Little Pitts	....	1.50
L. Chief	50	60
Mexican	6½	....
Moose	20	....
Miner Boy	5	7
Navajo	4.25	4.55
Nor. Belle	10	....
N. Belle Isle	28	35
Ori. and Mil	25	28
Rappah'k	17	....
Robinson Con	1.05	1 10
R Sun	75	76
Red Eleph	10	....
Standard	....	20
S. Cliff	....	68
Sutro	38	40
Spr'g Val	2.50	4.00
Stormont	....	65
S. Hite, new	13	....
South Pacific	8	10
St. L. 1 and 4	9	....
St. L. 2 and 3	26	27
Tip Top	....	2.50
Tioga	....	25
Tuscarora	18	....
Unadilla	8	....
Vizina	1.00	....

GENERAL HARDWARE.

Although the month of July is generally looked upon as the proper time for the announcement of changes in lists and discounts for the fall season, the developments so far point to the continuance of the prices of last spring; in fact, the only changes of importance announced during the week are an advance in the price of Clothes Wringers, the particulars of which will be found below; and a break in the price of Copper Rivets and Burs, quotations of which are for the moment nominal. The outlook for fall business is considered highly encouraging, and, as stocks of Builders' Hardware and Mechanics' Tools in first hands are unusually light for this season, it is believed by many well-informed people in the trade that the demand during the last half of the year will be in excess of the supply.

At a meeting of the manufacturers of Wood Screws, held in Providence, R. I., on the 28th ultimo, it was decided to make no changes in prices or terms.

The demand for Nails is not active, although we hear of some inquiry for large parcels, principally on Western account. The tone of the market continues strong, and stocks are said to be light, and, in some instances, badly assorted. We quote 10d. to 60d., $3.40 per keg, net, but in a small way an advance of 10¢ per keg is asked.

We print below a circular of the Clothes Wringer Manufacturers' Association, issued under date of the 1st inst., also the revised price list of Bailey Wringing Machine Co., of same date; the revised prices for the Metropolitan Mfg. Co.'s "Universal" Clothes Wringers will be found under the heading of New York Wholesale Prices on another page.

JULY 1, 1882.

To the Jobbing Trade: An advance of $3 per dozen on Clothes Wringers has been ordered by the president of the Clothes Wringer Manufacturers' Association, to take effect immediately, and all shipments on and after this date will have to be made at the advanced price. Owing to the continued high price of Rubber and the increased cost of other material, and of labor, it was not possible to deliver the goods at the prices at which they have been sold and make a fair profit. Jobbers who deal in "Contraband Wringers," which infringe patents owned by ourselves or our licensees, will not be furnished with regular goods.

LICENSED MANUFACTURERS.

METROPOLITAN MFG. CO.
BAILEY WRINGING MACHINE CO.
SIMPSON & GAULT MFG. CO.
EUREKA CLOTHES WRINGING MACHINE CO.

TRADE PRICE LIST OF NOVELTY AND EXCELSIOR CLOTHES WRINGERS, FOLDING WASH BENCHES AND IRONING MANGLES.

All these Wringers have patent flange cog-wheels on both ends of the rolls.

Novelty Wringers, with Curved Clamp.

	Size of Roll. Length Inches.	Length Inches.	Retail Prices.	Wholesale Prices, Per doz.
No. 2	10	1¾	$5.00	$45.00
No. 3	11	1¾	5.50	49.50
No. 4	12	1¾	6.00	54.00
No. 22	10	2	6.00	51.00
No. 33	11	2	7.00	58.50
No. 44	12	2	8.00	66.00
Novelty Wringers with Straight Clamp.				
No. 2½	10	1¾	5.00	45.00
No. 3½	11	1¾	5.50	49.50
No. 4½	12	1¾	6.00	54.00
No. 22½	10	2	6.00	51.00
No. 33½	11	2	7.00	58.50
No. 44½	12	2	8.00	66.00
Excelsior Wringers with Folding Bench.				
No. A	10	1¾	7.00	63.00
No. B	11	1¾	7.50	67.50
No. C	12	1¾	8.00	72.00
No. AA	10	2	8.00	69.00
No. BB	11	2	9.00	76.50
No. CC	12	2	10.00	84.00
Excelsior Wringers for Stationary Tubs.				
No. E	10	1¾	6.00	54.00
No. F	11	1¾	6.50	58.50
No. G	12	1¾	7.00	63.00
No. EE	10	2	7.00	60.00
No. FF	11	2	8.00	67.50
No. GG	12	2	9.00	75.00
Excelsior Wringers, Laundry and Factory.				Each.
No. H	12	2½	12.00	8.50
No. HH	14	2½	15.00	10.50
No. JJ	16	3	30.00	22.50
No. KK	18	3½	40.00	30.00
No. 00	11	4½	50.00	37.50
No. 000	15	5½	100.00	85.00

Folding Wash Benches, $12 per doz., and Domestic Mangles, $7.50 each for No. 1, and $11.50 each for No. 2.

Terms.—30 days, net. Orders subject to established prices ruling at time of shipment, and prices subject to change without notice.

DELIVERY.—Freight allowed to the leading jobbing points not beyond St. Louis and Chicago. No charge for boxing or cartage.

July 1st, 1882.

We have received the following circular:

NEW YORK, July 1st, 1882.

To the Trade: Existing prices for our Wrenches having been confirmed, we continue to quote Coe's "Genuine" at 40 and 10 per cent. discount from list. "Mechanics" Wrenches made by L. Coes & Co., and similar quality by A. G. Coes & Co., will continue to rate at 10 per cent. less than the "Genuine."

CONFIDENTIAL.

A special discount of 10 per cent. will be allowed on specified orders for 50 dozen, for immediate shipment. Terms, 90 days, or 3 per cent. discount for cash in 10 days. Parties having purchased the quantity will be entitled to the extra discount on subsequent orders during balance of season ending December 31st, 1882. Above quantity must be taken from either one or the other manufacturer, and includes only the Coes "Genuine" pattern, and not the "Mechanics" made by L. Coes & Co., or a similar quality made by A. G. Coes & Co., the price of either being 10 per cent. less than the "Genuine," and are subject to same quantity schedule.

DURRIE & MCCARTY,
Agents for L. Coes & Co.
GRAHAM & HAINES,
Agents for A. G. Coes & Co.

W. Dodman and T. P. Burke have formed a copartnership as manufacturers' representatives, and have established themselves at No. 88 Chambers street. We have received a circular, addressed to the wholesale and export trade, under date of the 6th instant, signed by Yerkes & Plumb, Philadelphia; Plumb, Burdict & Barnard, Buffalo; Lehigh Mfg. Co., Bethlehem, Penn.; McKinney Mfg. Co., Pittsburgh Penn.; Waterbury Knife Co., Waterbury, Conn.; Smith Bros.' Mfg. Co., Chicago, Ill.; the Cincinnati Barbed Fence Wire Co., Cincinnati, Ohio, and Sidney Shepard & Co., Buffalo, N. Y., in which they say: "We have engaged Messrs. Dodman & Burke, No. 88 Chambers street, New York, as our representatives, and they will be prepared at all times to give you our very lowest figures." On Page 21 illustrations of some of the specialties manufactured by Smith Bros.' Manufacturing Co., Chicago, Ill., will be found, and to which we invite the attention of the trade.

The following circular explains itself:

PAWTUCKET, R. I., July 1, 1882.

DEAR SIR: The firm of William H. Haskell & Co. has been incorporated under the name and style of William H. Haskell Co., under which the business so long carried on by the first-named will hereafter be conducted under the same management. All orders received from old or new customers will be filled promptly and satisfactorily. Thanking you for your kind patronage in the past, we would respectfully solicit a continuance of the same in the future. Respectfully yours, WM. H. HASKELL CO.

Their New York agency will continue as formerly in charge of Henry B. Newhall, No. 105 Chambers street, and their Boston agency in charge of James H. Work, Nos. 13 and 15 Pearl street.

The Standard Mfg. Co., Boston, Mass., illustrate in their advertisement on page 39 a new Self-Basting Broiler to which we invite attention.

We have received the following circular:

NOS. 4 AND 6 WARREN STREET,
NEW YORK, July 1, 1882.

To the Members of the Hardware Board of Trade, Limited.—GENTLEMEN: As there are many financial transactions incidental to our business which cannot conveniently pass through the medium of this Board, I have, with the approval of the Board of Directors, established myself as a private banker, at the above location, with sufficient capital for the business, and will, in addition to acting as Actuary and Treasurer of the said Board, receive and give prompt attention to all business in my line intrusted to my care. My long experience with this Board gives me special facilities for the collection of sight and time drafts, checks, notes and bills of exchange throughout the country, which I will take at moderate rates, and to this especial branch solicit a share of the business of yourself and friends. Very respectfully yours,

JAMES H. GOLDEY.

IRON.

American Pig.—Very little business has transpired since our last writing, and a holiday air pervades the market. Sales are reported of 1500 tons Thomas Nos. 1 and 2 X at our quotations, and some small parcels of various brands at full figures. The tone of the market is strong, and we do not hear of the slightest pressure to sell. We quote: Foundry No. 1 X, $25; Foundry No. 2 X, $23; Gray Forge, $22.

Scotch Pig.—The holidays have curtailed business considerably, and, beyond a few small parcels sold at full figures, no transactions are reported. We repeat former quotations, viz: Eglinton, $23; Carnbroe and Glengarnock, $24.50 @ $25; Coltness, $26.50 @ $27; Gartsherrie $26.50; and Langloan, $25.50 @ $26.

Rails.—There is nothing doing, so far as we can learn, in Iron Rails, and as we have nothing on which to base quotations, we omit them. Steel Rails are quoted $47.50 @ $50, at mill.

Old Rails.—No new business in Old Rails has come to our notice since our last review of the market. T's are quoteed $26 @ $26.50, and Double Heads, $27.50 @ $28.

Scrap.—We hear of a sale of 200 tons No. 1 Wrought, to arrive, at $27.50. We quote: Wrought Scrap from yard, No. 1 prime, $29 @ $30, and No. 1, to arrive, $27 @ $27.50.

METALS.

Copper.—Sales for the week have not exceeded 200,000 lb Lake Superior, at 18⅛ @ 18¼ ¢, while "Anchor" brand and Baltimore may be quoted as heretofore, 17⅝ @ 17¾ ¢, nominally. Of futures none are wanted, nor any offered. For the moment no outside Lake Copper is on the market. Manufacturers seem to be getting on very well, barring the interruptions incident to the labor troubles and the lull around the national holiday, to which all other branches of industry have been subjected as much. Quotations came by £1. 10/ better with Best Selected per cable from London the day before yesterday, and 10/ with Chili Bars, the former being wired at the time £74. 10/, and the latter. £67 10. We presume the increase of consumption arising from the more extended application of electricity in its latest forms begins to favor more and more the highest grades of Copper in England and on the Continent, thus accounting for the advance in Best Selected. As for Chili Bars, the prospect of a recovery in production on the West Coast are not very bright, unless Mr. Santa Maria's (the Chilian President) programme, as sketched out in his late message, be promptly carried out, and by a reduction of the army of occupation in Peru, hands taken away from mining and agriculture can be restored to the productive branches of Chili. Copper for the time being seems to be in a very sound position in Europe. We meanwhile receive from London the following cable message: "Market quiet, with moderate inquiry and small business. Prices steady. Best Selected is quoted at £72 @ £72. 10/, and Chili Bars, £66. 15/ @ 67." Manufacturers have made no change in prices. They quote: Bottoms, 31¢ @ 32¢; Braziers, 30¢ @ 36¢; Circles, 33¢ @ 36¢; Sheathing, 28¢, and Bolt Copper, 30¢; Segment Sheets, 33¢; Fire-box ditto, 30¢.

Tin.—The continual advance in London has at length stirred up a semi-excitement in this market. The reason given for the steady London improvement is the critical position in which the Suez Canal and Eastern transit are placed as long as England has not got on the spot a respectable force to shelter the canal from destruction at the hands of the Egyptian rebels, the unaccountable, not to say disgraceful, delay in this respect causing, it seems, considerable uneasiness among merchants in Europe and America dependent on this route for the regular supply of East India goods. Till these apprehensions are removed Tin cannot help remaining feverish. Thus London came this morning £100. 5/ with Straits Tin, a rise of over £2 the last few days. This has raised the price of Straits here at once to 23¢ @ 23½¢. The June deliveries in London have been 1200 tons, and 700 in Holland, together, 1900 tons; the June shipments from Singapore were 200 tons to this country, and only 100 tons to England, while Australia shipped to the latter country 500 tons. We perceive, from our Australian exchanges, that in Queensland quite important Tin discoveries have recently been made on the banks of the Nomanty River, the deposits being almost pure metal pervaded by veins of quartz. The statistical position of Tin is getting better all along on this side. The visible supply on June 30, according to Messrs. William I. Russell & Co.'s, 12 Cliff street, New York, semi-monthly circular was only 2951 tons, against 3198 tons June 15, outside importers and speculators holding 550 tons. The price of Straits on June 30 was 22¾¢, against 20½¢ last year, 18⅝¢ in 1880, 15¼¢ in 1879 and 14⅛¢ in 1878. We receive by cable the following dispatch from London this afternoon: "Market continues quiet and prices still tend upward. Transactions fair. Straits Tin, spot, £99. 15/ @ £100, and futures, £100 @ £100. 15/." *Tin Plates* have been very quiet, at unaltered figures. We quote toward the close, large lots, ordinary brands, ℔ box: Charcoal Bright, $5.90 @ $6.25; ditto Ternes, $5.35 @ $5.50; Coke Tin, $5.25 @ $5.30, and ditto Ternes, $5.12½ @ $5.25. Liverpool cabled the day before yesterday: Coke Tin 16/, and Charcoal 18/ @ 20/, and to-day we are informed that the demand continues good and that prices are firm.

Lead.—Business since our last report has been of a moderate jobbing character merely, a couple of hundred tons thus being placed in a retail way at $4.95 @ $5, while wholesale Common Domestic may nominally be quoted $4.80 @ $4.85. Advices from St. Louis are highly favorable, and produce much firmness in Refined at this point at 5¢, while at St. Louis, where Lead is scarce and stiff, it commands $4.62½ @ $4.65, with 35¢ freight this way, and Hard is worth at that center $4.55 @ $4.60. One of the leading Western smelting concerns expresses itself to the following effect about Refined Lead: "We see no prospect of a fall, as the outlook for bullion in Colorado is slim at present, and freight to New York is stiff at 35¢." Manufactures have been subject to no change since our last. We quote: Pipe, 7½¢; Sheet, 8¢; Tin-lined Pipe, 15¢; and Block, 45¢; all less 10 % to the trade. From London we are cabled to-day as under: "No change to note. Market continues quiet, with light demand. English Common Pig, £14. 5/ @ £14. 7/6."

Spelter and Zinc.—Common Spelter has been featureless, within the range of $5.40 @ $5.50 for both Domestic and Silesian. So far as we can glean from the Continental papers, the syndicate and its results fail to come up to expectations, and as for this side the labor troubles in Iron industry have checked activity in the galvanizing branch. We quote: Bertha Refined, 8¢, and Bergenport, 9½¢. We are reported by cable from London to-day as follows: "Demand remains light and prices have dropped a little. Ordinary, at shipping port, £16. 12/6 @ £16. 17/6." *Sheet Zinc*—Is steady at 7¼¢ @ 7½¢.

Antimony.—The jobbing demand continues remarkably brisk, but prices do not recover. We quote Cookson, 13½¢ @ 13¾¢, while we are told Hallett is offering at 11¢. London is unchanged.

FOREIGN TRADE MOVEMENTS.

The following is a summary of foreign trade movements during the past week:

IMPORTS.

For the week ending June 30:

	1880	1881.	1882.
Total	$9,188,199	$7,676,266	$8,063,735
Prev. reported	248,030,685	206,900,468	245,671,152
Since Jan. 1	$257,218,884	$214,576,734	$254,634,887

Included in the imports were articles of merchandise valued as follows:

	Quantity.	Value.
Antimony	50	$3,251
Anvils	152	$1,052
Brass goods	27	3,476
Bronzes	11	918
Chains and anchors	44	2,102
Clocks	35	3,690
Copper	....	2,992
Cutlery	127	37,927
Gas fixtures	3	1,274
Guns	167	30,890
Hardware	41	1,064
Iron, hoop, tons	1	34
Iron, pig, tons	9,018	172,648
Iron, sheet, tons	72	5,287
Iron ore, tons	1,437	3,529
Iron, other, tons	3,279	116,224
Machinery	1?3	19,640
Metal goods	109	15,562
Nails	2	329
Needles	13	3,573
Nickel	18	5,590
Old metal	....	5,217
Pins	2	158
Platina	1	5,238
Plated ware	1	20
Percussion caps	27	5,528
Quicksilver	100	3,824
Saddlery	22	5,406
Steel	63,328	239,871
Speiter	110,455	4,388
Silverware	12	3,410
Tin, bxs	36,702	248,461
Tin, slabs, 4,571; 454,071 lbs	....	117,075
Wire	152	2,843
Zinc, lbs	117,287	5,398

The quantity of leading articles compares with previous dates as follows:

	For the week.	25 weeks 1882.	Same time 1881.
Cutlery, pkgs	127	3,601	3,538
Hardware, pkgs	41	552	587
Iron, R. R. bars	...	74,310	176,848
Lead, pigs	....	16,544	18,093
Steel, pkgs	63,328	1,071,148	485,908
Tin, boxes	36,702	1,091,753	772,183
Tin slabs, lbs	454,071	8,794,890	7,923,373

EXPORTS OF SPECIE

For the week ended June 30:

Total	$1,647,597
Previously reported	34,283,437
Total since January 1, 1882	$35,931,534
Same time in 1881	6,063,691
Same time in 1880	4,651,804
Same time in 1879	11,211,716
Same time in 1878	8,712,502
Same time in 1877	20,361,756
Same time in 1876	31,604,052
Same time in 1875	56,994,292
Same time in 1874	20,045,518
Same time in 1873	30,990,318
Same time in 1872	30,262,459

EXPORTS EXCLUSIVE OF SPECIE

For the week ended July 3:

	1880.	1881.	1882.
Total	$9,447,246	$7,059,549	$4,940,319
Prev. reported	189,720,660	185,554,409	153,614,778
Since Jan 1	$199,167,906	$192,613,958	$158,555,097

IMPORTS

Hardware.

Austin, Nichols & Co.
Machine, 1
Barbour Bros.
Machinery, bxs., 8
Boker, Hermann & Co.
Cutlery and guns, pkgs., 64
Burkinshaw W. C.
Cases, 2
Bamburger & Oppenheimer,
Ironware, cs., 30
Crabb Wm.
Machinery, case, 1
Clark Thread Co.
Machinery, cs., 104
Conover J. S. & Co.
Files, cks., 18
Degrauw, Aymar & Co.
Mdse., pkgs., 11
Drexel, Morgan & Co.
Arms, cs., 20
Field Alfred & Co.
Cases, 15
Folsom H. & D.
Arms, cs., 2
Mdse., cs., 9
Frasse P. A. & Co.
Mdse., cs., 2
Godfrey Chas. J.
Mdse., cs., 6
Hartley & Graham,
Mdse., cs., 8
McKinless T. A.
Packages, 5
Pollman August,
Package, 1
Schuyler & Duane
Case, 1
Scoville Mfg. Co.
Mdse., case, 1
Taylor Thomas,
Mdse., pkgs., 3
Wagner W. F.
Screws, cks., 2
Wiebusch, Hilger & Co.
Cutlery and anvils, pkgs., 287
Winchester Arms Co.
Mdse., cs., 3
Order,
Machinery, cs., 20
Packages, 5
Cases, 2

Iron.

Anglo-Am R. Co.
Packages, 32
Baring Bros & Co.
Rods, bdls., 1714
Bars, 9815
Nail rods bdls., 112
Bank of North America,
Wire, cs., 9
Bond, Parsons & Co.
Pig, tons, 200
Brown Bros. & Co.
Bars, 5313
Wire rods, coils, 1059
Brokaw Bros.
Pig, tons, 140
Crocker Bros.
Pig, tons, 175
Spiegel, tons, 226
Coddington T. B. & Co.
Sheet, cs., 83
Crabb Wm.
Castings, 2
Camacho & Vengoechea
Castings, piece, 1
Elliott, Son & Co.
Ore, tons,
Ore, kg., 371,360
Horstmann & Co.
Rods, bdls., 17,494
Ironclad Mfg. Co.
Bundles, 17
Cases, 314
Low & Von Romondt,
Old boiler, 1
Lundberg Gust
Wire, coils, 202
Bar ends, bxs., 800
Mason John W. & Co.
Wire rope, bales, 2
Morton, Bliss & Co.
Rails, 3093
Beam, 1
Naylor, Benzon & Co.
Bars, 916
Rivera J. de.
Old iron, tons, 2
Ward, Niebuhr & Co.
Wire, bdls., 689
Order,
Pig, tons, 1665
Ore, tons, 203
Order.
Railroad iron, tons, 450
Rods, bdls, 5468
Bars, 3473
Rods, pkgs., 6155
Wire rods, coils, 1704
Oxide, cks., 98
Hoop, bdls., 1998
Bundles, 3997
Castings, 20

Steel

Blake Bros & Co.
Bundles, 120
Carey & Moen,
Rods, bdls., 405
Cox J., Jr., & Co.
Blooms, 62
Dolge A.
Wire, cks., 4
Duval H. R.
Cases, 7
Plates, 59
Freedman & Co.
Steelware, cs., 6
Wagner W. F.
Cases, 48
Bundles, 511
Bars, 202
Plates, 89
Order,
Packages, 67
Rails, 2453
Rods, pkgs., 1496
Bundles, 427
Iron and steelware, pkgs., 25
Bands, 137

Metals.

Ansonia Clock Co.
Mdse., cs., 22
Baring Bros. & Co.
Tin plates, bxs., 2780
Bank of Montreal,
Tin, bxs., 114
Tin plates, bxs., 2485
Blake Bros. & Co.
Plumbago, bbls., 2218
Barnes Company,
Tin, slabs, 962
Behn, Meyer & Co.
Tin, slabs, 504
Budde & Westermann,
Bottle caps, cs., 51
Bond, Parsons & Co.
Tin plates, bxs., 2559
Canadian Bank of Commerce,
Tin, bxs., 400
Tin plates, bxs., 40
Drexel, Morgan & Co.
Plumbago, bbls., 877
Dolge A.
Tin plates, bxs., 2846
Dickerson, VanDusen & Co.
Tin plates, bxs., 1048
Elwell Jas. W. & Co.
Copper, csk., 1
Copper, bdls., 2
Hendricks Bros.
Antimony, cks., 34
Ketchum E. & Co.
Tin plates, bxs., 321
Lamarche H. & Sons,
Zinc, cks., 175
McGee Jas.
Tin plates, bxs., 2000
McCoy & Sanders,
Nickel alloy, cs., 10
Mitchell, Vance & Co.
Mdse., cs., 4
Moor T. B. & Co.
Antimony, cks., 17
Phelps, Dodge & Co.
Tin plates, bxs., 6698
Tinware, bxs., 4850
Tin, ingots, 240
Rendle A. E.
Zinc bars, cs., 4
Tixich Ford.
Zinc, cks., 13
U. S. Stamping Co.
Tin plates, bxs., 243
Wilson & Armus,
Old copper, pkgs., 3
Order.
Tin plts., bxs., 11,032
Tinware, bxs., 18,556
Spelter, plates, 2065
Spelter, ingots, 3676
Brass wire gauges, cs., 5
Lead, pigs, 704
Scrap zinc, pkgs., 104

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending July 4, 1882:

	Quan.	Val.
Dutch West Indies.		
Hdw., pkgs	1	$69
Mf. iron, pkgs.	9	148
Ptm., gals	1937	210
Dutch East Indies.		
Ptlm., gls.	720,040	81,159
Hamburg.		
Ptlm., gals.	486,080	36,965
Mach'y, pkgs.	22	1,220
Ag. imp., pkgs	21	466
Clocks, pkgs.	2	116
Sew. ma., cs.	1028	21,121
Mf. iron, pgs.	163	1,200
Hdw., pkgs	26	1,234
Cutlery, cs.	1	50
Lgt rod fix, cs	4	120
Antwerp.		
Naph., gals	139,626	9,076
Ag. imp., pgs	4	225
Mach'y, pkgs.	5	109
Hdw., pkgs	5	240
Abo.		
Petm. gals.	99,301	8,500
Stockholm.		
Ptlm., gals.	150,000	12,000
Bremen.		
Ptlm., gals.	909,300	65,300
Ag. imp., pkgs	23	795
Mf. iron, pge.	1	40
Mach'y, pkge.	1	31
Hdw., cs.	2	28
Emry whls, cs	1	206
Amsterdam.		
Hdw., pkgs	50	2,544
Clocks, bxs	2	25
Pumps, pkgs.	6	287
Stettin.		
Ptlm., gals.	137,863	10,000
Copenhagen.		
Hdw., pkgs.	6	429
Pumps, pkgs.	10	400
Glasgow.		
Arms, cs.	3	295
Hdw., cse.	1	67
Mf. iron, pgs.	27	544
Ag. imp., pkgs	3	139
Clocks, pkgs.	98	2,300
Liverpool.		
Ptm., gals.	55,750	8,757
Clocks, pkgs.	46	929
Mach'y, pkgs.	18	549
Hdw., cs	21	717
Brass, pkgs.	295	27,000
Ag. imp., pkgs	10	400
Nails, bxs.	240	1,000
Hull.		
Pumps, pkgs.	8	291
Ag. imp., pkgs	24	382
Hdw., cs.	60	1,213
Clocks, bxs.	146	2,207
Springs, cse.	1	133
Mach'y, pkgs.	16	3,250
London.		
Clocks, pkgs.	395	9,841
Mch'y, pkgs.	78	6,045
Elec. appr, pgs	31	6,000
Guns, cs.	8	950
Mf iron, pkgs	110	1,719
Hdw., pkgs.	245	4,037
Stmpdwre, cs.	32	1,893
Sew. ma., cs.	191	4,404
Havre.		
Ag. imp., pgs.	3	600
Copper, cks.	90	20,250
Sew. ma., cs.	10	583
Mach'y, cs.	13	200
Palma.		
Ptlm., gals.	450,300	38,149
Jeddah (Arabia).		
Ptlm., gals.	450,000	49,937
New Zealand.		
Mach'y, cs.	24	900
Hdw., pkgs.	141	2,709
Mf. iron, pgs.	251	2,402
Nails, cs.	9	65
Clocks, pkgs.	81	1,815
Stmpdwre, cs	7	285
Agl. imp., pkgs	82	1,474
Sew. ma., cs.	50	805
Ptlm., gals.	28,800	3,950
Tasmania.		
Hdw., pkgs.	86	2,641
Pumps, pkge.	1	30
Nails, kegs.	39	266
Ag. imp., pkgs	7	206
Ptlm., gals.	28,800	3,461
Saws, cs.	5	41
British North American Colonies.		
Ptlm., gals.	8200	940
Mf. iron, pgs.	92	784
Mach'y, pkgs.	8	300
Hdw., pkgs.	13	557
Clocks, pkgs.	2	100
British West Indies.		
Hdw., pkgs.	76	1,213
Mach'y, pkgs.	10	510
Nails, kegs.	63	291
Pumps, pkgs.	2	32
Ptlm., gals.	15,089	1,839
Boiler	1	2,802
Mf. iron, pkgs	20	340
Windmill	1	120
Revolvers, cs.	3	807
Clocks, pkgs.	32	612
Cartridges, cs	3	55
Sew. ma., cs.	18	201
Ag. imp., pgs.	5	49
Nails, cs.	4	25
China.		
Ptlm., gals.	407,000	41,718
Philippine Islands.		
Petm., gals.	341,690	39,396
Scales, cs.	2	132
Mexico.		
Mf. iron, pkgs	199	3,203
Ptlm., gals.	29,200	3,350
R. R. cars	26	8,773
Hdw., pkgs.	534	11,603
Mach'y, pkgs	1158	61,166
Mf. steel, pkgs	65	551
I tanks	2	142
Y. metal, pgs.	26	498
Locomotive parts, cs.	3	297
Ag. imp., pgs.	47	916
Pumps, pkgs.	13	334

	Quan	Val.
Cartridges, cs	16	$609
Trucks	36	249
Revolvers, cs.	2	250
Shoe nails, cs.	5	21
Anchors	6	139
Nails, kegs.	23	79
Clocks, pkgs.	16	841
Turn tables	2	2,900
Bridg girders.	8	2,100
Copper, sheet	1	10
Iron, pkgs.	141	191
Carbines, cs.	2	85
Firearms, cs.	54	15,380
Bell	1	84
Spikes, kegs.	50	175
Central America.		
Nails, kegs.	213	748
Mf. iron, pkgs	130	1,188
Mach'y, pkgs.	9	432
Per. caps, cse	1	30
Cutlery, cs.	3	19
Wh'ls & axles	5	90
Ptlm., gals	24,220	3,459
Hdw., pkgs.	61	1,409
Sew ma., cs.	71	1,285
Ag. imp., pgs.	31	276
Shot, kegs.	16	178
Arms, cs.	2	160
United States of Colombia.		
Cutlery, cs.	2	101
Mf. iron, pgs.	139	2,411
Hdw., cs.	39	687
Cop. kettles.	8	240
Nails, kegs.	32	136
Ag. imp., pkg.	16	144
Revolvers, cs.	2	356
Ptlm., gals.	1000	100
Sew. ma., cs.	19	568
Cutlery, cs.	1	29
Shot, kegs.	6	61
Mach'y, pkgs.	49	703
Clocks, bxs.	3	52
Cartridges, cs	1	128
Hayti.		
Nails, kegs.	113	373
Nails, cse.	1	28
Mf iron, pkgs	52	821
Hdw., pkgs.	17	179
Ptlm., gals	1700	253
Nails, bbls	2	62
Iron, bdls.	20	154
Ag. imp., pgs.	6	151
Brazil.		
Ptlm., gals.	114,845	13,235
Shoe nails, cs.	6	36
Cutlery, cs.	2	361
Iron, cases.	10	55
Hdw., pgs.	108	1,849
Mf. iron, pkgs	22	156
Cartridges, cs	46	987
Rifles, cs.	5	880
Sew. ma., cs.	19	243
Nails, kegs.	65	247
Barrows	48	64
French West Indies.		
Ptlm., gals.	3000	326
Cuba.		
Ag. imp., pgs.	15	240
Sew. ma., cs.	308	3,616
T. hoops, bdls	6	260
Hdw., pkgs.	158	3,736
Nails, kegs.	157	616
Pumps, pkge.	1	22
Nails, bxs.	10	189
Steam pump.	1	326
Tubing, bxs.	3	489
W. closets, box	1	43
Tacks, cs.	3	25
Cutlery, cse.	1	27
I. tube, bdls.	45	200
Mf. iron, pgs.	598	5,151
Ptlm., gals.	156,943	12,835
Boilers	3	2,440
Mach'y, pkgs.	257	6,192
Iron, pkgs.	7	68
Genoa.		
Ptlm., gals.	22,500	1,569
Naph., gals.	3000	315
Constantinople.		
Ptlm., gals.	372,550	35,665
Nails, kegs.	3	15
Canary Islands.		
Ptlm., gals.	10,000	1,037
Cartridges, cs	1	13
Clocks, bxs.	6	225
Hdw., cs.	1	9
Venezuela.		
Sew. ma., cs.	6	175
Hdw., pkgs.	27	473
Ptlm., gals	2000	215
Mf. cop., pgs.	2	87
Cutlery, cse.	1	43
Mf. iron, pgs	2	28
Ag. imp., pgs.	8	147
Clocks, bxs.	7	156
Brs. g'ds, pge.	1	88
Mach'y, pgs.	27	3,744
Nails, kegs	10	34
Africa.		
Ptlm., gals.	318,000	34,980
Mf. iron, pkgs	3	58
Cutlery, cse.	1	11
Sew. ma., cs.	1	50
French Possessions in Africa.		
Ptm., gals.	138,131	13,225
Porto Rico.		
Mf. iron, pgs.	1	17
Ptlm., gals	200	36
Chili.		
Clocks, pkgs.	4	353
Hdw., pkgs.	463	8,101
Mach'y, pgs.	13	349
Tacks, cs.	223	1,524
Nails, kegs.	600	2,005
Ptlm., gals.	45,000	4,932
Bells, cse.	1	147
Ag. imp., pkgs	99	5,571
Mf. iron, pkgs	70	435
Pumps, pkgs.	2	70
Sew. ma., cs.	113	2,443
British Guiana.		
Nails, bxs	22	100
Ptlm., gals.	250	50
Mf. iron, pkgs	2	18
Hdw., pkgs.	13	219
British Possessions in Africa.		
Ptlm., gals.	17,250	1,965
Ag. imp., pkgs	335	5,267
Hdw., pkgs.	254	3,767

COAL.

With July 1st the prices of Anthracite Coal are advanced from 10¢ to 15¢ on most descriptions, the principal changes being on Grate and Egg. The Pennsylvania Company will delay its advance of 10¢ on Furnace Lump until the 15th inst. The advance in wages takes place simultaneously at the mines, and it is understood that 6¢ of the advance in Coal is on account of increased wages. A good fair business is in progress, apparently satisfactory in volume for this season of the year, and the prices realized are reported to be nearly or quite up to the circular rates. Coal is moving off at a rate that prevents accumulation to any extent, so that stocks usually are light. At the same time, it is remarked among leading minds in the trade that a suspension of labor at half time in the mines during the last two weeks in July is quite probable.

The July circular prices of the principal companies, excepting the Reading, given last month, are as follows:

	Del. & H. C. Co.	Pa. Coal Co.	Del. Lack. & W. Co.
Lump	$4.00	$3.95	$4.00
Steamer Lump	4.00	3.95	4.00
Grate	4.15	4.05	4.15
Egg	4.15	4.05	4.15
Stove	4.30	4.25	4.30
Chestnut	4.35	4.20	4.30
Pea	3.15	2.90	3.15

The above are f. o. b., and the companies reserve the right to advance upon these prices at any time, except upon orders entered prior to such advance.

Freights Eastward are $1.10 @ $1.15 to Boston, and vessels just now are plenty.

The Philadelphia *Ledger* says: "We have rarely seen at this season of the year the Anthracite Coal trade in better condition than it is to-day, and, with the fact in view that the production of Anthracite Coal for this year to date is nearly equal to that of last year to the same date (which was the largest in the history of the trade) with an unusually small amount of Coal on hand anywhere, there is little question about the market taking all the Coal produced for the balance of the year. The production of Coal to June 24, 1882, was 11,920,377 tons; to June 25, 1881, 11,986,701 tons, showing a decrease this year of 66,336 tons."

The Bituminous trade is badly demoralized by the strikes in Cumberland and Clearfield. The impression among the operators is that the miners in Clearfield will go to work by the end of the present week on the company's terms, and the Cumberland operators think their men will resume work when the others do. Another week, they believe, will decide the matter.

OLD METALS, PAPER STOCK, &c.

The purchasing prices offered by dealers are as follows:

Copper, heavy	℔ ℔.	$ ...	@	$0.15½
" light	"	...	@	.14
Copper Bottoms	"	..	@	.13½
Yellow Metal		..	@	.10
Brass, heavy	"	...	@	11½
Brass, light	"	.09½	@	.10
Composition, heavy	"	.15	@	.15½
Lead, heavy	"	.04⅜	@	.....
Tea Lead	"	.04	@	.....
Zinc	"	...	@	3½
Pewter, No. 1	"	.13½	@	.14
Pewter, No. 2	"	.08	@	.09
Wrought Iron	℔ ton.	24.00	@	25.00
Light do	"	13.00	@	.....
Stove Plate	"	12.00	@	13.00
Machinery do	"	.....	@	17.00
Grate Bars	"	5.00	@	5.50
Electrotype plates	℔ ℔.	.04½	@	....
Stereotype plates	"	.05	@	....
Small type	"	.06½	@	....

The prices current (prices paid by local dealers) for Rags, &c., are as follows:

Canvas, Linen	℔ ℔.	3½c.	@	4 c.
White Cotton, New	"	3½c.	@	....
No. 2	"	2¼c.	@	2½c.
White, No. 1	"	4c.	@	.....
" No. 2	"	1¾c.	@	2 c.
Seconds	"	½c.	@	1¼c.
Soft Woolens	"	c.	@	8 c.
Mixed Rags	"	1¼c.	@	2 c.
Gunny Bagging	"	1½c.	@	.....
Jute Butts		2 c.	@	2¼c.
Kentucky Bagging	"	c.	@	3¾c.
Book Stock		2 c.	@	2¼c.
Newspapers		.....	@	1¼c.
Waste Paper and Scraps		⅜c.	@	¾c.
Kentucky Bale Rope	"	3½c.	@	4 c.

PHILADELPHIA

Office of *The Iron Age*, 220 South Fourth st., PHILADELPHIA, July 3, 1882.

Taking the market as a whole there is no material change to note. Business during the past week has been very quiet, with very few noteworthy transactions, except perhaps in one or two specialties. This, of course, is expected at this season, owing to the holidays. The outlook, however, has undergone a great improvement since the beginning of June, and the depressed feeling that was so conspicuous at that time has given place to a very hopeful feeling. It is difficult to say what the exact cause of the improved feeling is, but it is very generally believed that the favorable crop reports have had a salutary effect on the market. There is little doubt that the crop reports, coupled with the improved state of the stock market, have been important factors in bringing about the improved feeling, not only in the iron market, but in business generally. The demand for nearly all kinds of iron is evidently on the increase, but buyers have not lost the spirit of conservatism which has ruled so long in their transactions, and are not inclined to place orders for lots much beyond their immediate consumptive requirements.

Pig Iron—Remains unchanged. Foundry Irons are steady and firm, and have held their own without any difficulty. The demand is good, and at full quotations. Stocks are light at furnace, owing no doubt in great part to the heavy consumptive demand which has been in progress of late. Consumers' yards are also bare of stocks. There are prospects of a demand which will probably keep prices steady, and, as both seller and buyer appear to be content to base transactions on current quotations, it is likely that prices will not vary much either way for some time, unless, of course, something unforeseen makes its appearance. Mill Irons are neither as active nor as firm as Foundry Irons, though there is a fair demand for the higher grades, while others are weak, and it is difficult to do business unless concessions are made. We have heard of a sale of 1000 tons of good Gray Forge at $21 at furnace. We quote as follows: $23.50 @ $24.50 for No. 1 Foundry; $22 for No. 2 Foundry; and $20 @ $21 for Gray Forge, all free on cars at furnace.

Foreign Iron.—There are several inquiries on the market for Bessemer which will probably develop into business at an early date; $24 @ $25 seem to be about the asking figures. Spiegeleisen is also asked for, and it is probable that transactions will be based on something like $36 for 20 %, but we have failed to hear of any definite transactions.

Muck Bars—Continue to show more activity, and sales have been made at $42 @ $43 for extra brands. Others have sold at $41.50, all at mill.

Blooms—Remain unchanged at about the following quotations: Charcoal Blooms, $72.50; Run-out Anthracite, $60 @ $62.50; Scrap Blooms, $52.50 @ $55; and Northern Ore Blooms, $47.50 @ $50.

Bar Iron.—The market is quiet and without change. Manufacturers are not urging sales, being content to take business as it comes along. Deliveries are being made at 2.6¢, Philadelphia, which is the outside price. We have heard of business being done at a shade less than 2.6¢, and manufacturers outside the city are still a shade lower.

Plate and Tank Iron.—It is absolutely impossible to place orders for immediate delivery, the mills being fully sold up for some time to come. We quote: Tank, 3.3¢; Shell, 4¢; Flange, 5¢; and Fire-box, 6¢.

Sheet Iron—Is still very active, the manufacturers having their capacity fully taxed. Prices are firmly held, with an advancing tendency, and may be quoted as follows:

Common Sheet, No. 27 and 28	5.25¢
Common Sheet, No. 26	5¢
Common Sheet, No. 22 to 25	4.75¢
Common Sheet, No. 16 to 21	4.50¢
Best Refined ¼¢ advance on the above.	
Best Bloom Sheets, No. 26 to 28	7¢
Best Bloom Sheets, No. 22 to 25	6¾¢
Best Bloom Sheets, No. 16 to 21	6½¢
Common Red Plates, 3-16 to 16	3.8¢
Blue Annealed, 3-16 to 16	4¢
Best Bloom Galvanized, discount	30 %
Second quality, discount	40 %

Structural Iron—Is fairly active, and several thousand tons of Bridge Irons have been closed at current quotations, which are as follows: Angles, 2.9¢ @ 3¢; Tees, 3.75¢ @ 3.87½¢; Beams, 4¢, and Channels, 4.2¢.

Steel Rails.—Inquiries are mostly for small lots and early delivery, and $50 at mill is usually asked for such orders, but it is probable that concessions might be had for desirable orders. Forty-pound rails are in demand, and have sold at $51 @ $52.50 at mill, according to size of order.

Iron Rails—Are exceedingly quiet, and nominally quoted at about $45 @ $48 at mill, according to section of rail. A lot of street rails, 43-pound section, about 700 tons, sold at mill at $47.50 for shipment to Baltimore.

Old Rails.—There is not much doing. Tees have sold at $27, Double Heads are offered at about $28.

Scrap Iron—Continues extremely dull and difficult to move; average lots would command about $26 @ $26.50, and choice lots about $1 more.

PITTSBURGH

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., July 3, 1882.

The first month of the great Iron lockout has passed and the second one entered, with the end as far off, apparently, as it was June 1st. A great many people, among these the ironworkers, expected the present strike to collapse within a week or two after its inauguration by the mills, one after another, signing the scale presented by the Amalgamated Association and starting up, but in this they have been disappointed. In all strikes for a number of years past the strikers have been victorious, and it was generally taken for granted that they would have, to use a common phrase, a regular walk over; this time the manufacturers have developed a good deal more determination than the public generally gave them credit for. Indeed, the manufacturers are gaining strength almost every day. They are having more confidence in each other, while the workers every now and again give evidence of weakness, and some of them openly acknowledge that they have made a mistake. It is true, the meeting of the finishers yesterday passed a resolution declaring that they would stand by the Amalgamated Association—that they had no desire to secede from the same. Yet there is a very respectable minority of these ironworkers who have not been in sympathy with the strike from the first. Thus far but a single mill here has signed the scale unqualifiedly. We refer to the "Union." Two are being operated with non-union men, while the rest are all idle. That the manufacturers do not expect to start up soon is evident from the fact that they have generally commenced to overhaul their mills, some of which will require several weeks to complete. It is not expected that there will be any material improvement in general business until the fall trade opens up, which need not be looked for before the middle of next month, and this accounts largely for the indifference of manufacturers about starting up. Some of them would not resume now, even if the men were willing to go in at the old scale. It is generally conceded that the strike, by causing a suspension of production and preventing an accumulation of stock, has prevented a badly demoralized Iron market throughout the country.

Pig Iron.—There has been little or no change in the situation during the past week; business continues very dull, and no improvement can reasonably be looked for until the mills resume, of which there is not much prospect at present. Furnacemen appear to realize the situation; many of them have blown out already, and others will do likewise as soon as they have worked up what raw material they have on hand. It is estimated that furnaces representing a capacity of 4000 tons per day here and at points tributary to this market are out of blast, and this being the case, it is evident that there is not going to be the accumulation in first hands that was apprehended when the lockout was first inaugurated. Like the mills, a good many furnacemen will make repairs, some of which will require considerable time. Prices remain unchanged. Small sales, foundry grades, at $24 @ $26, 4 months; Gray Forge, nominal at $23 @ $24, 4 months; American Bessemer, $26, 4 months.

Muck Bar—Like Mill Iron, is not wanted, and in the absence of sales we omit quotations.

Manufactured Iron.—Trade continues quiet, as it nearly always is at this season. The demand is chiefly of a local character, and buyers find great difficulty in placing an assorted order. Some manufacturers have good stocks of certain sizes, while of others they have none, hence it is that buyers have a great deal of trouble in getting what they want. The Eastern and Cincinnati, together with the few other mills that are running, are able to supply the West, and that, too, without being crowded, which goes to confirm what has already been stated, that had the Pittsburgh mills all continued in operation there would have been such an over-production the effects of which could not have helped being very bad. In the present condition of the market it is difficult to quote prices; while some manufacturers are satisfied with full card rates for such stock as they have, others are exacting more.

Nails.—Business continues quiet; orders are mostly small and prices firm, but unchaned, $3.50 @ $3.60, net, in a jobbing way. As stated in our last report, there is little or no stock, and it is doubtful whether an assorted order for 500 kegs could be placed in this market.

Wrought Iron Pipe.—There is a fair business, with stocks very much reduced and badly broken; prices firm, but unchanged. Discounts on Gas and Steam Pipe, 60 @ 62½%, and on Boiler Tubes, 42½ @ 45%. The National Tube Works stopped last week, ostensibly to take stock, but it is probable they are out of Iron. Very little doing here in Oil-well supplies.

Rails, Etc.—Steel Rails are still quoted at $50 @ $52 per ton for near by, and $48 @ $50 for fall and early winter delivery. Railway Spikes remain unchanged, at $3 @ $3.15.

Steel.—The Merchant Steel mills make conflicting reports in regard to business. While some of them are pretty well supplied with orders, others are not. Prices unchanged; best brands Refined Cast Steel 12¢.; do., Crucible Machinery, 7½¢. Steel Boiler Plate, 6¢. @ 6½¢. There is an active demand for the latter, owing to the scarcity of Iron Boiler Plate.

Old Rails.—There have been no sales reported during the past week, in the absence of which we quote Double Headers at $28.50, and Tees at $27. Buyers report that they are being offered at these figures. Several railroad companies west of here have considerable quantities for sale, but they are holding in expectation of being able to realize better prices.

Scrap—Of all kinds continues dull, and it is difficult to quote prices in consequence. No. 1 Wrought is still quoted at $28 @ $30 ℔ net ton; Old Car Axles and Springs, $37 @ $40; Wrought Turnings, $20 @ $22; Old Car-wheels, $26 @ $27, gross; Cast Borings, $15 @ $16, gross; Crop Ends, $26 @ 26.50.

Coke.—Business continues to fall off, but is all that can be expected with so many Pig Iron furnaces going out of blast. Prices unchanged: $1.50 ℔ ton, free on cars at ovens in a regular way, and $1.75 for small foundry orders. Production is being curtailed some, ovens only being employed from four to five days in a week.

CHICAGO.

Office of *The Iron Age*, 36 and 38 Clark Street, cor. Lake Street, CHICAGO, July 3, 1882.

Hardware.—The condition of the Hardware trade remains unchanged since our last report, trade in seasonable goods being fair. Nails are in good demand at $3.75 @ $4 ℔ keg.

Manufactured Iron.—We find no change to report in this market; the demand is fair, and quotations, as a rule, are firmly maintained. We quote: Bar, 3¢; Angle, 4¢; T, 4½¢; Beams and Channels, 4¼¢ @ 4½¢; Hoop at 4¢; Sheet, Plate and Tank, 10 to 14 gauge, 4¢; 15 to 17 ditto, 4.30¢; 18 to 21 ditto, 4.60¢; 22 to 24 ditto, 4.80¢; 25 to 26 ditto, 5¢, and 27 ditto, 5.20¢. Patent Cold-rolled Shafting, dis. 20 %; Norway Iron, Original Bars, 5¢ rates; Norway Iron, re-rolled, 6¢ rates; Ulster Iron, 4½¢ rates; Low Moor Iron, 8¢ rates; Nuts and Washers, 7½¢ off list; Wrought Boat Spikes, 3¾¢ rates.

Steel.—The demand during the past week for tool, machinery and agricultural Steels has been light, which is not an unlooked for feature at this season. Quotations are firm as follows: Tool, 12¢; Machinery, O. H., 5½¢; Crucible Machinery, 7¢; Hammer, 2 inches and under, 8¢; over 2 inches, 9¢; Cast Spring, 7¢, and O. H. Spring, Tire and Sleigh Shoe, 5¢. Sheet, first, second and third quality, 12¢, 10½¢ and 8½¢, respectively; Crucible Plow, 6¾¢; Eagle Plow, 5½¢; Iron Center Plow, 10¼¢, and soft Steel Center Plow, 10¾¢.

Pig Iron.—The market indicates no particular change as having occurred during the week, Foundry Irons continue strong in tone and Scotch imported has been in somewhat better demand than formerly. We quote: Lake Superior Charcoal, Nos. 1 and 2, $28.50; No. 3, $29, and Nos. 4, 5 and 6, $30 @ $31; Calumet, $27.50 @ $28; Silvery Soft, $24 @ $26; Crane, No. 1, $28; No. 2, $27; Thomas, $28.50 @ $29.50; Imported Scotch, $28 @ $29, and American Scotch, $26 @ $28.

Scrap Iron.—A repetition of our last report would fairly indicate the condition of the Scrap Iron market, it being weak with a dull demand. We quote (dealers' purchasing prices, which are nominal): No. 1 Wrought Scrap, $21, net ton; No. 1 Railroad Scrap, $22 @ $23; ditto Heavy Cast, $18; ditto Stove Plate, $12; ditto Cast-iron Borings, $8 @ $9, and ditto Machine-shop Turnings, $11 @ $12.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., CHATTANOOGA, July 3, 1882.

Business in this district is about what it is anywhere at this season—slow, dull, lifeless The weather is hot; crops have not come to market; nobody does any more work than he must do. Finished materials hold up in price pretty stiffly, and raw materials are weak and unsteady. There is a decided disposition to go slow in all lines.

Pig Iron.—There is nothing new in the movement of metal. There will be very little Cold-blast Iron made in the South this year, and what is on hand will go off slowly. Small lots of mill and best foundry sell at quotations. We quote: No. 1 Foundry, $24 @ $25; No. 2 Foundry, $22 @ $23; Gray Forge, $20 @ $21; White and Mottled, $19 @ $20; Car-wheel Metal, $33 @ $37.

Ore.—We quote: 50 % Brown Hematite, ℔ ton, $2 @ $2.75; Red Fossil, $2 @ $2.25, delivered at furnace.

Miscellaneous Articles.—Old Rails are slow. We quote them at $27. Scraps are not sought for. We quote them at $23; Cast Scrap, $13 @ $15; Old Wheels, $28 @ $29.

Nails—We quote at $3.30 rates, carload lots. Small orders are filled from stores at $3.50.

Manufactured Iron.—Bar is steady at $2.50 for large bills. Mills are on single turn, and report enough business in sight to keep them going until October. Track supplies are rather scarce and command full rates We quote: Railroad Spikes, $3.40; Track Bolts, $4; Fish Plate, $3.

Coal.—This important article has fallen off sharply since the first of June, though sales have been so small that changes of figures were hardly worth the while. We quote: Fancy Lump, $2.50; Common, $2; Run of Mine, $1.50.

Coke.—We quote: Furnace Coke, $3 at point of consumption; Foundry, 10¢ @ 12¢ ℔ bushel.

Steel and Iron Rails.—Steel Bars, $50; Small T, $50 @ $53.

CINCINNATI.

JULY 3, 1882.—*Pig Iron.*—During the past week sales to the extent of several thousand tons have been made to consumers, mostly of Coke and Softener Silver Gray kinds, and at prices, when made public, that will sustain former quotations. The movement in the market is fairly active; the producers and consumers work easily together—all agreeing upon the theory that the cost of making Pig Iron is and will be from $2 to $3 more than last year, and that the consumer must "foot the bill." The current consumption of Pig Iron that must be drawn from this district, it is thought, will absorb the makes of all the furnaces in this territory, including largely the stocks that can or will be spared from the Georgia or Alabama furnaces. Quotations below will cover prices of the past week: Best brands Hanging Rock Charcoal Foundry, $28.50; good, $27.50 @ $28; best Hanging Rock Coke Foundry, $24.50; good, including Southern makes, No. 1, $22 @ $23; American Scotch, No. 1 best, $24; good, $23.50. Silver-Gray Softeners, No. 1, $22.50; good, $22; No. 2, $21.50; "Fluid," $20.50; Forge Charcoal, $23 @ $24; Coke, $20 @ $22.50; Stove Coal, $20 @ $21.50. Scrap—No. 1 Wrought, $1.30 @ $1.40; Country, $1 @ $1.25; Rails, $28; Cast No. 1, heavy, 80¢ @ 90¢; light, 50¢ @ 75¢; Old Car Wheels, $25. Bar Iron, $2.60 card rates. Mills all running on orders—a concession of 10¢ has been made on card rates for round lots when smaller sizes are needed. The Nail Mills throughout this region are taking orders and are filling them at but slight concession on card rate. The outlook in the Iron business is thought to be in the main fairly encouraging, looking to the interests of the producers and consumers.

LOUISVILLE.

MESSRS. GEO. H. HULL & CO., Commission Merchants, report to us as follows, under date of July 1, 1882: The market for hot-blast Iron continues firm, with a moderate demand for both Mill and Foundry grades. The stock of Silver Gray Irons is light and prices have slightly advanced. Car Wheel Irons continue nominal, with little or no demand. Our quotations represent inside figures for round lots to best cash buyers. We do not quote retail lots:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$27.00 @ 28.00
No. 1 Southern, Charcoal	24.00 @ 25.00
No. 1 Hanging Rock, Stonecoal and Coke	24.00 @ 24 50
No. 1 Southern, Stonecoal and Coke	23.00 @ 24.00
No. 2 " " "	22.00 @ 22.50
"American Scotch"	22.00 @ 23.00
Open Silver Gray	20.00 @ 22.00
Close Silver Gray	19.50 @ 20.00

MILL IRONS.

No. 1 Charcoal	..... @ .....
No. 1 Stonecoal and Coke, Neutral	21.00 @ 21.50
No. 2 Stonecoal and Coke, Neutral	20.00 @ 20.50
No. 1, Stonecoal and Coke, Cold-short	20.00 @ 20.50
No. 2, Stonecoal and Coke, Cold-short	19.00 @ 20.00
White and Mottled, Cold-short and Neutral	18.50 @ 19.00

CAR WHEEL IRONS.

Hanging Rock, Cold-blast	32.00 @ 34.00
Hanging Rock, W. B	28.00 @ 29.00
Alabama and Georgia, Warm and Cold-blast	30.00 @ 34.00
Central Kentucky, Cold-blast	32.00 @ 34.00

ST. LOUIS.

MESSRS. HOFFER, PLUMB & CO., Pig Iron and Iron Ore Merchants, 417 Pine street, report to us as follows, under date of July 1, 1882: There is a more buoyant feeling in the trade than for some time past. Prices, however, are unchanged.

HOT BLAST CHARCOAL.

Missouri	$24.50 @ 25 5
Ohio	28.00 @ 29.00
Southern	25.00 @ 26.00

COAL AND COKE.

Ohio	24.00 @ 27 00
Southern	24.00 @ 25.00

MILL IRONS.

Red-short	23.00 @ 24.00
Neutral	21.00 @ 22.00

CAR WHEEL AND MALLEABLE IRONS.

Missouri	27.00 @ 28.00
Southern	30.00 @ 35.00
Ohio	28.00 @ 38.00

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of July 1, 1882: Trade for the past week has ruled satisfactory, considering the season and unsettled condition of the market. Values remain about the same.

Ref. Bar Iron, 1 to 6 x ⅜ to 1	℔	2 6-10 @ 2 7-10¢
" " 1 to 4½ x 1½ to 2	℔	2 6-10 @ 2 7-10¢
" " ¾ to 2, Round and Square	℔	2 6-10 @ 2 7-10¢
Hoop Iron, 1¼ wide and upward	"	3½ @ 3¾¢
Band Iron, from 1½ to 6 in. wide	"	3 @ 3¼¢
Horse-shoe Iron	"	3¼ @ 3¾¢
Norway Nail Rods	"	5¼ @ 6 ¢
Black Diamond Cast Steel	"	12 @ 13 ¢
Machinery Steel	"	6 @ 7 ¢
Spring Steel	"	5 @ 5½¢
Common Horse Nails	"	10 @ 14 ¢
Railroad spikes, 5½ x 9-16	"	3¼ @ 3¾¢
Perkins' Horse shoes ℔ keg of 100 lbs		$4.87½
" Mule shoes		5.87½

NEW ORLEANS.

JULY 1, 1882.—Trade continues fairly active, and values in most lines are well sustained. We quote: Pig Iron, No 1 Foundry American, $25; Scotch, $26. Iron Rails to 30 lb, $56; 30 to 50 lb, $50; over 50 lb, $48. Steel Rails, $57 @ $62; Scrap Iron, No. 1 Wrought English, $20. Bar Iron, 2.90¢ @ 3¢ card. Wrought Iron Pipe, 60 to 62½ % discount, Nails, 3 65¢ card. Copper.—Braziers, 30¢; Sheathing, 28¢; Ingot, 20¢; Yellow Sheathing Metal, 20¢; Sheet Zinc, 7¾¢ @ 8¢.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., June 19, 1882.

THE IRON MARKET

remains quiet, taken as a whole, although there have been several tentative changes during the past week which are apparently indicative of a possible upward movement. In some quarters the opinion is expressed that higher values will be reached before long, but this view is not as yet indorsed by those whose experience of the trade, and in the trade, has been longest and most varied. Good judges hold that much depends upon the weather of the next two months, by the end of which period the harvest time will have arrived, and it will be possible to arrive at a pretty close estimate of the outcome of the cereal crops. During the past two weeks we have had cool and wet weather, in some parts the rainfall having been heavier than has been good for the wheat. This has been more especially the case in the North of England. At the same time, the cereal crops in this country are more forward in proportion than those on some of the lands of the Continent much further south. I have just taken a hurried run into Germany, through Bavaria, Wurtemberg, Baden, &c., *via* Holland, in going, and through Belgium and the North of France in returning, and my general impression is that the wheats will not be above, even if up to, an average; barleys light and short in the straw; rye a full crop; and the root crops full, but rather later than usual in the several districts. Of hay I fancy there will be a good bulk made, but unless the weather should improve, it will not be secured in proper condition. This hitch in the atmospheric arrangements is having its due effect upon the metal market as upon other industries. It is so perfectly understood that we need a good harvest to set the home market going again, that the crop reports are being read with keen attention by manufacturers, as well as by all who depend upon the home demand. Should Jupiter Pluvius dry up and allow the sun to have a chance for a few weeks all our hearts will be gladdened, and you may expect to hear of more notable progress in most or all of our manufacturing industries.

The Scotch iron market having been quite inanimate, so far as speculation is concerned, for some time past, sundry commendable efforts are being made to infuse more life into it. The ironmasters have issued a statement showing that there has been a net reduction of about 43,000 tons in the stocks of pig iron in Scotland between Christmas, 1881, and May 31st, 1882. During January the stocks increased largely, but latterly they would seem to have decreased. Last week's shipments having been larger, also, the warrant market has taken an upward turn, and within the past few days a considerable turnover in those securities has been noted. The advance has been supported and stimulated by the report that five or six of the furnaces now running on ordinary Scotch pig are about to be changed to hematites. Already two of these (William Dixon & Co.) have been so transferred and the remainder will be altered, it is expected, during the present week. The total reduction in the make of ordinary Scotch pig to be so effected may be set down roughly at 1500 to 1700 tons weekly. Whether these considerations will help prices largely, or the contrary, remains to be seen. All things borne in mind, it is probable that values will be somewhat, albeit not greatly, augmented for some little time ahead—possibly throughout the whole of the summer and early autumn. In the Cleveland district there have been few alterations of note, but as there was a decrease of something over 4200 tons in the quantity of pig held by the official storekeepers at Middlesboro' last week, it is probable that the market will grow stiffer. Along the West Coast there appears to be more vigor among the hematite smelters, who are said to be asking and getting more money for some of their brands. In a general way mixed numbers are quoted 53/6 @ 54/6, but I would not swear that even the lower of these prices represents the actual value at which bold buyers might open up and close negotiations. In any case the smelters are more hopeful, and report themselves well sold forward. In the other crude iron markets there have been no changes or incidents likely to interest American iron men. The success of the Thomas-Gilchrist process in South Staffordshire, as to which you will note a good deal of tall writing in the English papers of the time being, is not news to you, seing that I narrated the circumstance some weeks ago. Good basic steel has been made by Mr. Gilchrist from ordinary Staffordshire cinder pig, and that fact has been made the text for numerous sermons as to the "prompt" and "great" revolution which is consequently to take place in the old center of the iron trade. The steel is to be made, we are assured, at 70/ or so a ton; finished iron is to be wholly superseded, and puddling instantaneously abolished! There is little or nothing to be said or written by cool-headed men anent such wild nonsense as this. As Mr. Hingley, a prominent Staffordshire ironmaster, remarks: "The steel has been made, and it appears good and satisfactory, but we are not prepared to say at what cost. It may be inferred," he adds, "that if it costs £5. 10/ to make rails by this process, there will be a good margin for rolled iron for some time to come, and also a chance for puddling." The truth lies between the extremes, as usual. The preliminary trials have been successful; two or three large concerns are about to put down plant; other two or three are undecided at present, and the remainder of the mill owners, &c., of the district will await developments before they venture to touch basic working. The manufactured iron trade is steady, with good sales of sheets, a fair call for hoops (with some new American inquiries), a sustained demand for constructive iron and for galvanized sorts. For scrap and old rails there is no inquiry worthy of note; hence prices are purely nominal. Bessemer sorts are irregular. In some quarters there is a desire to sell blooms at £4. 15/ or less, chiefly on the part of those who have been "stuck" on old American or other contracts. As a rule, no maker of repute would sell forward more than a month at present rates. Old railway leaf-spring steel, c. i. f., usual United States ports, is called £5 @ £5. 5/. Steel rails are quiet and nominal at £5. 5/ @ £5. 10/, but I fancy £4. 17/6 or, perhaps, £4. 12/6 would fetch along some of the least busy producers. In tin plates there is little change. Stocks are beginning to droop somewhat, and the make is a trifle smaller, but values are not appreciably higher. Ordinary I. C. cokes are 15/9 @ 16/ a box. The demand is an average, and is expected to grow larger with the nearer approach of your fall trade.

SCOTCH PIG IRON.

Having already commented upon this branch of the trade, I will not do more here than give a certain amount of statistical information. There are 108 furnaces blowing in Scotland, including 8 on hematites (not 8000 as your printer made me say recently), as against 120 a year ago. Shipments to June 10th have been 274,247 tons, against 238,675 tons last year, a net increase of 35,572 tons. In Connal's stores, at Glasgow, there are 637,383 tons, as compared with 563,732 tons same date of 1881. The importations of Middlesboro' pig iron into Scotland to June 10th have been 101,322 tons, or 29,859 tons less than during the same portion of 1881. I am indebted to John E. Swan & Brothers, Limited, Glasgow, for the following official return of the production, &c., of Scotch pig iron during 1882:

	Tons.
Production.	
1881—Average number of furnaces blowing, calculated upon the official returns issued by the Associated Ironmasters of Scotland, as at 25th December, 1881, 116, producing 196 tons per furnace, equal to 22,736 tons per week, say till 3d June, 1882, 23 weeks	522,928
1882—Average number of furnaces blowing, 107, producing, say 200 tons per furnace, equal to 21,400 tons per week	492,200
Average decrease of production in 1882, 1336 tons per week, equal to 5.87 %, total	30,728
Exports.	
1881—From 25th December, 1880, till 4th June, 1881	226,344
1882—From 25th December, 1881, till 3d June, 1882	259,977
Average increase of shipments in 1882, 1462 tons per week, equal to 14.85 %, total	33,633
Consumption, including Deliveries by Railway to England.	
1881—From 25th December, 1880, till 4th June, 1881, say 23 weeks, at 8880 tons per week	204,240
1882—From 25th December, 1881, till 3d June, 1882, say 23 weeks, at 11,980 tons per week	275,540
Average increase of consumption in 1882, 3100 tons per week, equal to 34.91 %, total	71,300
Stocks—In Warrant Stores.	
1881—25th December, Connal & Co	627,186
1882—3d June, Connal & Co	637,327
Increase in 1882	10,141
1881—25th December, Ardrossan store	2,650
1882—3d June, Ardrossan store	none
Decrease in 1882	2,650
Increase in stores, 326 tons per week	7,492
With Makers.	
1881—25th December	291,346
1882—3d June	240,538
Decrease in 1882, 2,209 tons per week	50,808
Net reduction of stocks, total	43,317

1881—Total stocks increased at the rate of 3450 tons per week, or 15.17 %. 1882—Total stocks decreased at the rate of 1883 tons per week, or 8.79 %, showing an improvement in the general position of the trade of 5333 tons weekly, or 23.96 % better in 1882 than in 1881. The return issued by the ironmasters as at 31st May, 1882, included every work in Scotland, excepting Summerlee and Clyde, but as these two brands have been in active request throughout, we have adopted a fair ratio of decrease. There is practically no stock at Clyde furnaces. It should also be noted that the above figures relate to the period between December and May, prior to the full opening of the navigation, and shipments will now likely proceed without interruption till the end of the year.

Writing from Glasgow on June 17, James Watson & Co. said: "The Scotch iron market has been strong this week, with more animation and a larger business doing both in warrants and maker's iron. The large shipments and fine weather have stimulated buying. The quotations for shipping brands have been advanced about 1/ per ton. The market at Middlesboro' is steady and without change. The warrant market here opened last Monday at 47/4½, fluctuating that day between 47/3 and 47/5 per ton. On Tuesday the price advanced from 47/5½ to 47/9 per ton, and on Wednesday morning the market relapsed in the forenoon to 47/7, afterward firming up to 47/10, cash. Yesterday the market was strong, business being done from 47/10 to 48/4 per ton; and this forenoon the market opened very firm, with transactions from 48/5½ to 48/7, afterward receding to 48/2½, and closing with buyers at 48/3 per ton." The shipments last week were 14,270 tons, as compared with 12,331 tons for the corresponding week of last year. We quote:

	No. 1	No. 3.
G. M. B., at Glasgow	49/6	47/6
Clyde, "	51/6	49/6
Coltness, "	60/	55/6
Langloan, "	60/	55
Gartsherrie, "	50/6	54/6
Summerlee, "	58/	51/
Calder, "	57/6	51/6
Carnbroe, "	52/6	49/
Glengarnock, at Ardrossan	52/	49/
Eglinton, "	49/6	48/3
Dalmellington, "	49/	48/6
Shotts, at Leith	60/	55/6
Kinneil, at Bo'ness	48/6	47/
Carron, at Grangemouth	49/6	48/6

Several new orders for large vessels have been received by the Clyde shipbuilders.

MIDDLESBORO' PIG IRON

has been, and is, steady. The current shipments are on a fairly good scale and the local consumption is heavy. Makers and merchants may be considered in unison for prompt deliveries, but some of the latter class of dealers are offering August-October at 42/9 for No. 3. Present prices of G. M. B., net, cash, delivered free at makers' wharves in the Tees are:

No. 1 Foundry	47/6	Mottled	42/
" 2 "	45/6	White	41/6
" 3 "	43/6	Refined metal	62/6
" 4 "	43/	Kentledge	43/6
" 4 Forge	42/6		

The Continental call is sustained, but there is no particular pressure anywhere. The expected American boom has not yet turned up. Ship plates for September-December deliveries are easier. Bolckows are still well engaged on rails and a few lots of blooms, but new business is reported rather scarce.

WEST COAST HEMATITES

are not much altered on paper, but the smelters are firmer in their views and are less anxious to sell far in advance. There are 59 furnaces in and 22 out—total 81. The output is estimated to be about 29,500 tons weekly, and the stock held in reserve by makers and others is roughly calculated at from 90,000 to 100,000 tons. Makers' prices are about as under:

	No. 1.	No. 2.	No. 3.
Cleator	62/	61/	...
Lonsdale	56/	55/	54/
Workington	56/	55/	54/
West Cumberland	...	...	...
Lowther	56/	55/	54/
Moss Bay	...	...	...
Distington	56/	55/	54/
Harrington	56/	55/	54/
Solway	56/	55/	54/
Maryport	57/6	56/	55/

Average of mixed numbers 53/6 @ 54/6 ℔ ton. Last week's shipments were 9918 tons of pig iron and 4893 tons of steel rails and blooms.

SOME CURRENT PRICES

are appended, as being likely to be of service to you at this juncture, especially as we learn by cable to-day that 100 tons of sheets have been sold by an English manufacturer, delivered in Pittsburgh, at half a cent per pound below the local rates:

In Liverpool:

	£	s.	d.		£	s.	d.	Cash dis. p.ct
Iron—Bars, Com. Welsh	5	15	0	@	6	0	0	3
" Cleveland	6	12	6	@	6	15	0	2½
" Lancashire	6	10	0	@	6	12	6	2½
" Staffordshire	6	10	0	@	6	12	6	2½
" Best "	7	0	0	@	7	2	6	2½
" Coine, Crown (CC) Best Refined	7	10	0	@	.....			2½
Bars, Angles, 10/ per ton extra.								
Nail Rods, Common Staffordshire	6	15	0	@	6	17	6	2½
Nail Rods, Best Staffordshire	7	5	0	@	7	7	6	2½
Hoops, Crown Staffordshire	6	17	6	@	7	2	6	2½
Hoops, Best Staffordshire	7	7	6	@	7	10	0	2½
Sheets, Crown Staffordshire	8	7	6	@	8	15	0	2½
Sheets, Best Staffordshire	9	7	6	@	9	15	0	2½
Sheets, Pen	10	15	0	@	11	0	0	2½
" Heron B. B	11	15	0	@	12	0	0	2½
Plates, Common	7	15	0	@	8	0	0	2½
Plates, Staffordshire, Crown	8	0	0	@	8	5	0	2½
Plates, Best Staffordshire	8	10	0	@	8	15	0	2½
Swedish Hammered Bars from stock	12	0	0	@	.....			2½
Swedish Nail Rods	12	0	0	@	.....			2½
Bessemer Steel—Bars	10	10	0	@	11	0	0	2½
" Hoops	11	0	0	@	11	10	0	2½
" Sheets and Plates	12	0	0	@	16	0	0	2½
Bowling Iron—Bars, ordinary	19	10	0	@	.....			2½
Plates, ordinary	22	10	0	@	.....			2½
Rivets, ordinary	23	10	0	@	.....			2½
John Bradley & Co.'s Iron—Hoops	9	15	0	@	.....			2½
Crown (SC) Bars	10	10	0	@	.....			2½
Sheet	11	5	0	@	.....			2½
Charcoal H N Rods	18	5	0	@	.....			2½
Charcoal Sheets	20	5	0	@	.....			2½
Tin Plates—Best Charcoal, ℔ box I. C	0	21	0	@	0	23	0	3
Second Charcoal, ℔ box I. C	0	19	0	@	0	20	0	3
Best Coke, ℔ box I. C	0	17	6	@	0	18	0	3
Second Coke, ℔ box I.C	0	17	0	@	0	17	6	3
Common Coke, ℔ box I. C	0	16	0	@	0	16	6	3

In London, &c.

	Per ton. £	s.	d.		£	s.	d.	Dis. p.ct
Iron—Bars, Welsh, in Wales, f. o. b	5	10	0	@	.....			..
Bars, Staffordshire (London), f. o. b	7	5	0	@	8	10	0	3
Bars, North Country (in the Tees or Tyne), f. o. b	6	5	0	@	.....			2½
Angle iron North Country (in the Tees or Tyne), f. o. b	6	7	6	@	.....			2½
T, North Country (in the Tees or Tyne), f. o. b	6	17	6	@	.....			2½
Nails, Best Tough, (London), f. o. b	7	5	0	@	.....			2½
*Hoops, ordinary, f. o. b	7	7	6	@	.....			2½
*Hoops, good ordinary, f. o. b	7	15	0	@	.....			2½
*Sheets, ord'y, f. o. b	8	10	0	@	.....			2½
*Sheets, good quality, f. o. b	9	0	0	@	10	0	0	2½
*Plates, Staffordshire (Crown), f. o. b	8	10	0	@	10	0	0	2½
*Plates, best boiler and tank, f. o. b	9	0	0	@	10	0	0	2½
* 5/ @ 7/6 less Liverpool.								
Pigs—Scotch g. m. b., (Clyde), f. o. b	2	7	3	@	.....			2½
Pigs—Yorkshire Redcar, F'dry No. 1, f. o. t.	2	7	6	@	.....			net
Foundry No. 3, f. o. t.	2	3	6	@	.....			net
Gray forge, No. 4, o. t	2	2	6	@	.....			net
Swedish ham'd bars, London, ex ship	10	5	0	@	11	5	0	net
Galvanized iron—Corrugated sh'ts. 20 gauge, f. o. b	13	0	0	@	.....			..
Corrugated sheets, 24 gauge, f. o. b	14	0	0	@	.....			..
Copper—Sheet & sheathing, f. o. b	77	0	0	@	79	0	0	2½
Flat bottoms, f. o. b	81	0	0	@	.....			2½
Tough cake and ingot, f. o. b	72	0	0	@	.....			2½
Flat tiles for India, about 14 lbs., f. o. b	72	0	0	@	.....			2½
Best selected ingot, f. o. b	73	10	0	@	74	0	0	2½
Burra Burra, Wallaroo, in warehouse	71	10	0	@	72	10	0	2½
Chili slab in Liverpool, for prod. 96 %, in warehouse	68	0	0	@	.....			2½
Yellow metal sheathing, P. H. Muntz & Co.'s, f. o. b., ℔ ℔	0	0	6¼		.....			2½
Yellow metal brazier, P. H. Muntz & Co.'s (soft, specially made for India), f. o. b. ℔ ℔	0	0	6¼		.....			6½
Cop. wire, 1 to 20, delivered. ℔ ℔	0	0	9¾		.....			2½
Brass wire, 1 to 20, dedelivered, ℔ ℔	0	0	7¼		.....			2½
Tin—English block or ingot, f. o. b., ℔ ton	101	0	0	@	.....			1¾
Eng. block, bars, f. o. b., ℔ ton	102	0	0	@	.....			1¾
English refined block or ingot, f. o. b., ℔ ton	103	0	0	@	.....			1¾
Fine Straits, in warehouse, ℔ ton	97	0	0	@	.....			1¾
Banca, in warehouse, ℔ ton	98	0	0	@	.....			net
Fine Australian, in warehouse, ℔ ton	97	0	0	@	.....			net

Scotch Rolled Iron (all less usual discount).

	Glasgow.	N. B. crown.	Govan.	Other brands.
Bars	£6 10/	£6 10/	£6 10/	£6 10/
Hoops	7 10/	7 10/	.....	.....
Nail rods	6 10/	.....	.....	.....
Angle iron	7 10/	7 10/	7 ..	.....
Boiler plates	8 ..	... ..	.....	.....
Ship plates	7 15/	.....	.....	.....

Extras.—Flat, Half-Round, Oval and Half-Oval, Per ton.

		⅛"	3-16"	¼"	5-16"	⅜"	½"
5-16" wide,	×	—	—	90/	—	—	—
⅜" "	×	—	100/	80/	60/	—	—
7-16" "	×	—	—	60/	60/	50/	20/
½" "	×	—	60/	50/	50/	40/	—
⅝" "	×	—	50/	40/	40/	30/	30/
¾" "	×	60/	40/	30/	30/	20/	20/
⅞" "	×	40/	30/	20/	20/	10/	20/
1 & 1⅛" "	×	30/	20/	10/	10/	—	—
1¼ to 6" "	×	—	10/	—	—	—	—
6½ to 7" "	×	—	80/	10/	10/	10/	20/

7¼"	8"	8½"	9"	10"	11" 12"
20/	30/	40/	50/	50/	60/ 60/

Round, Square and Octagon.

1⅛ in. to 3¼ in. 10/
4 in. 20/
4¼ in. 30/
4½ in. 40/
4¾ in. 50/
5 in. 60/
5¼ in. 70/
5½ in. 80/
5¾ in. 90/
6 in. 100/

7-16 in. ..... 8/ to 10/
⅜ in ..... 10/ to 20/
5-16 in. ..... 20/ to 30/
¼ in. ..... 30/ to 40/
No. 4 W. G. ..... 40/ to 50/
No. 5 W. G. ..... 50/ to 60/
3-16 and No. 6 .. 70/ to 80/
No. 7 W. G. ..... 90/ to 100/
No. 8 W. G. 120/

[For Staffordshire iron. rails, blooms, &c., see the cablegram in this issue, and the figures given elsewhere in this letter.]

PRICES OF METALS, ETC.

These are as now offered by a leading London house:

	Per ton. £.	s.
Lead ore, picked, in 1 cwt. kegs	18	..
Pig lead	14	15
Tea lead	18	10
Antimonial lead	17	..
Sheet lead	15	5
Lead pipe	15	15
" tinned inside	17	5
Lead incased tin pipe	33	..
Composition gas tubing	17	5
Lead wire, to No. 12, 28/, 13 to 16	..	37
Hand leads, 24/, deep sea leads	..	34
Improved lead washers	28	..
Lead nails	40	..
Tin pipe	122	..
Bar lead (3 lbs. and upward)	15	5
Patent shot	17	10
Hardened shot	18	..
Antimony	59	..
Tin in ingots	103	..
Tin, bars in 4 cwts. barrels	102	..
" " 2 cwts. barrels	102	10
Tin Plates, Coke I. C., per box	..	17
" Charcoal I. C., per box	..	20
Plumbers' solder	50	..
Tinman's "	60	..
Brass solder, per lb	...8½d. to 9½d.	
Gen. red lead (orig. packages)	16	10
Reduced No. 1 "	15	10
" No. 2 "	15	..
" No 3 "	14	..
Glassmakers' red lead	18	..
Pure English flake litharge, 5-cwt. casks	17	..
Pure English powdered litharge	18	10
Good foreign flake litharge	16	10
" powdered	18	..
Pale powder litharge	17	10
Orange lead, powdered	20	10
Dry white lead	19	10
Genuine ground white lead	21	10
No. 1	19	10
No. 2	17	10
Sheet zinc, No. 9 upward	21	..
" V. M	22	..
Zinc nails, 1¼ upward	27	..
Hard spelter	12	10
Remelted spelter	16	00
Anti-friction metals—Babbitt's	£75 and 95	..
Taylor's	70	..
Kingston's	130	..

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, June 18, 1882.—*Metals.*—A moderate amount of business has been transacted, but, with the exception of Dutch Tin, prices in the metal line are higher. We quote to-day: *Copper.*—Chili Bars, 72.50 @ 175 francs per 100 kg.; Ingots and Slabs, 180; Best Selected, 185, and pure Corocoro Ore, 172.50. *Tin.*—Banca and Billiton, 265; Straits and Australian, 263.75, and English, 260. *Lead*, 36 @ 37, and *Spelter*, 45 @ 45 50. *Iron.*—Dealings in this city have never been greater than they were during the week under review, without, however, improving prices, still to be quoted 20.50 @ 21.50 francs for Merchant and Flooring. At the North Common Merchant is bringing 19 @ 19.50; I Iron, 20 @ 20.50; Corners, 20 @ 21; large Plates, 22 @ 22 50; Common Sheets for bridges, 25, and for boilers, 28, all for 100 kg. The abundance of orders in France justifies the firmness noticeable. The founding of new iron works and the blowing in of additional blast furnaces clearly indicate that business proceeds satisfactorily. Meanwhile, Belgian rolling mills continue effecting sales at Paris. Articles apparently best suited to be ordered for France from Belgium are large plates and sheets. Great activity will soon be displayed at the military posts of France, where the number of operatives will soon be increased by the Government. Cheerful news has arrived from the Algerian Iron Ore regions, as well as from certain localities where Copper, Spelter and Quicksilver are found. Capitalists have taken matters in hand, and the province of Constantine, where these discoveries are made, rich and populous as it is, begins more and more to attract attention. New railways will soon be built between the mines and seashore. *Coal.*—We are at present in the midst of the dullest season in this city, nor is there much doing in the North, the Pas-de-Calais and Loire Basin. Prices have undergone no change.

BELGIUM.

(Moniteur Industriel.)

BRUSSELS, June 18, 1882.—*Iron.*—The state of affairs in Belgium might be better; prices are extremely irregular in consequence of the violent competition among producers. Thus two Charleroi works have underbid during the week their competitors in Iron and Steel in a most extraordinary manner, unsettling the market thereby and causing hesitation on the part of consumers all over the country. They seem to be very hard up for orders, although, as a general thing, it cannot be said that there is a lack of orders in Belgium; our blast furnaces in particular have, indeed, more orders yet to be filled than they can attend to with ease. People in this country are still energetically bent on pushing their export trade, and they are vigorously aided in this endeavor by the Government and the import and export sample museum of the foreign office. Belgium has even ventured upon a commercial expedition to the West Coast of Africa, our African Commercial Co. having dispatches from Antwerp a fortnight since, the Akassa, bound for that coast, being the pioneer in this new traffic. As we can produce most manufactures cheaper than any other European country, it is fair to presume that all these steps to increase our export trade will be productive of solid results. The Government is also reducing freight rates to promote traffic to and from Italy via the St. Gothard Tunnel. No stone is left unturned with this steady aim before us to increase our business relations with desirable customers, and as the Government and merchants and manufacturers all co-operate harmoniously, great confidence is shown in the movement to obtain better outlets. Prices of Iron and Metals have not changed since our last. In *Coal* an extraordinary amount of activity is being displayed, there being a demand for all sorts of industrial Coal.

GERMANY

(Borsenhalle.)

HAMBURG, June 19, 1882.—*Iron.*—Our Dortmund correspondent reports as under: "The feeling in Iron has, on the whole, gone on improving with the exception, perhaps, of Puddling Pig, which is less firm, the rolling mills not being, for the most part, ready to subscribe to the asking figure o blast furnaces of 60 @ 62 marks ℔ ton, but in hope of buying at 58. One of the chief reasons of this reserve of theirs arises from the fact that the

Luxembourg-Loraine Pig Iron syndicate has reduced its price from 60 francs to 56. There has been no abatement in the firm feeling with which Spiegel, Dortmund Foundry and Bessemer Pig are held. The hope is expressed that Merchant Iron will begin to look up next month, and that rolling mills will then be able to do better. An urgent demand is still noticeable for beams and coarse sheets, but this is not the case with other kinds of Finished Iron and drawn wire. Thin sheets still find it difficult to recover from a low ruling, although a few Siegen works made a faint effort to screw up prices a trifle. Thus previously Thin Sheets brought, most of the time, more than Boiler Sheets, selling at 210 @ 215; but for the moment they have to be sold for 170 @ 175. For the Frankfort railroad and for Denmark, some 13,000 tons Iron sleepers and Steel Rails are now wanted, but English makers compete vigorously with ours in Steel Rails for the latter country. The Steel works have, for the present, not many new orders in prospect; they miss very much the at one time so important American ones. As for bolt and screw makers, and hardware manufacturers generally, they are still getting on swimmingly. This refers with equal force to car-making establishments and axle and car-wheel shops, as well as to boiler makers. The export demand for tools is exceptionally brisk. On the other hand, both machine shops and foundries might be busier. Bridge builders cannot boast of important commands. *Coal.*—Coal contracts are made earlier this year than is usually the case, and the advance asked by producers is willingly granted in view of the prosperous crop time that seems to be drawing near. Coke still weak." *Metals* have been moderately active. Lead is steady; we quote English Pig, 16 @ 16.50 marks ℔ 50 kg.; ditto Sheets, 16.50 @ 17; German Pig, 14.50 @ 15, and Spanish 18 @ 18 40. Copper is quiet; Drontheim at 73; Electrolytic, 76 @ 77, and Refined Ingot (English), 73 @ 74. Tin remains steady at 108 @ 109 for Banca and English Refined, and 106 @ 107 for ditto Common. Spelter is inactive at 72.25 @ 17.50 for Silesian, spot and to arrive.

CHILI.

(Weber & Co.)

VALPARAISO, April 28, 1882.—*Copper.*—Lower cable quotations from England did not fail to exercise a depressing influence on our prices. Sales 6250 quintals at $17.50 @ $18.15, and of 12,000 quintals Regulus at $8 for 50%, on board at Calders. *Nitrate.*—The decline abroad has not lowered the price here, holders, still engaged in filling former contracts, not forcing any on the market. Sales have been confined to 232,000 quintals at $2.72½ @ $2.80, with 40/ @ 45/ freight. The demand for the United States has materially diminished, it being evident that shipments thither have of late been altogether too heavy; thus charters have not exceeded 14,000 tons, all for Europe. *Coal* does not improve, Orrell steam, having been sold at 25/, Newcastle steam at 28/, and smelting at 26 @ 27. *Exchange* dull at 35/¾.

Mr. A. Hartupee on the Pittsburgh Pumping Engines.

The following letter has been received by the Pittsburgh Select Council:

To the City Councils.—GENTLEMEN: On the 7th day of February, 1879, the officers of the city took possession of the engines and pumping machinery erected by me for the new water works. One of the engines—No. 4—was disabled in the spring of 1880, and is still unrepaired; no one of the engines is now in perfect working order, and the city is on short allowance of water and in constant danger of a complete famine. Believing that the engines and machinery are capable of supplying the city with water, that all the difficulties heretofore encountered have arisen from improper management and certain minor defects, which can be readily remedied; that the materials are amply sufficient for the work required, and that no part of the work made by me has been broken for want of strength or bad workmanship; with a view to secure a certain supply of water, and also to secure a settlement of any claims against the city, I submit the following proposition, viz.: That the valve chambers now broken be replaced with new ones upon the plan of those made at the Atlas Works; that new valves be put in all the chambers of a plan to be designated by me, at a cost not exceeding $4000. All other parts of the machinery now broken to be replaced with new and perfect parts, these repairs to be made under contract, to be made by the city and to be paid by the city, and to be made as soon as possible. The engines put under my control and to be run by me for one year from the date of the completion of said repairs. The engineers and other employees to be recommended by me, the number to be employed and the salaries to be fixed by agreement. I will agree after the engines are put in order to keep the city supplied with water sufficient for its demands, at my own expense to replace all parts of the machinery which may be broken in running, the city to bear the running expenses, and at the end of the time to deliver the engines and machinery over to the city in good working order. That is, I will guarantee to run the machinery and pump water into the Hiland avenue reservoir without breakage except by reason of accident outside of the machinery itself. If I succeed in running the engines successfully and deliver the machinery to the city at the end of the time in good working order, the city to pay me the amount awarded me by the arbitrators with interest from the date of award, or if they prefer to pay the balance due upon the contract, and such an amount for extra work as may be fixed by three engineers, one to be selected by me, one by the city, and a third by these two, both amounts to bear interest from the time possession was taken by the city, except 10 per cent., upon which interest shall be calculated for one year from that date. If I fail to turn the engines over to the city in good working order at the end of the term, I will release all claims against the city, provided, if any breakage should occur near the end of said term, I shall be allowed a reasonable time after its expiration for making such repair, if necessary. If any question shall arise under the contract, the same to be submitted to three arbitrators, to be chosen as above stated. I further propose to take charge of the boilers, to make certain alterations, at a cost not exceeding $3000, and if such changes are made, I will agree to accept instead of a salary, the difference in cost of coal and labor of any two months' running, the boilers to be estimated before and the same time after possession is taken by me. Respectfully, A. HARTUPEE.

June 26, 1882.

P. S.—The foregoing proposition is made as an offer of compromise, and not to prejudice any claim which I may have against the city. A. HARTUPEE.

The motive power for the trains passing through the St. Gothard Tunnel has been a subject of much investigation. The cable system, compressed air and electricity have all been seriously considered and dismissed as likely to prove inadequate. It appears, therefore, that the ordinary steam locomotive will be used until improvements embodying strikingly apparent advantages are brought out. It is probable that with a good head of steam and a fire under full headway, without fresh coal, no serious difficulties will be encountered and the escape of any products of combustion will be inappreciable. So far the traffic has been light, and since there is a strong current of air through the tunnel from south to north, it is said that the atmosphere is not vitiated to any great extent. The interior of the tunnel is saturated with moisture which is taken up by the current of warm air from the south, which grows warmer during its passage. Striking the colder body of air at the north end of the tunnel, it loses its capacity for moisture, and the water in it is precipitated in the form of a quite thick mist, which always hangs about the northern entrance.

Business Failures Since January 1.

The Mercantile Agency of R. G. Dun & Co. send us the figures of failures for the first half of 1882. The total number of failures reported is 3597, as compared with 2862 for the first six months of 1881. The liabilities for the six months just closed are $50,000,000, against $40,000,000 for the corresponding period of last year. The percentage of increase, therefore, both in number and amount of failures, equals 25 per cent. In regard to these figures the circular of the agency remarks as follows: "Although the failures exhibit a considerable increase in number and amount, the figures reached are yet so proportionately limited that they furnish no real ground for apprehension. Judged by the comparisons which are possible with previous years, both in number of casualties and in the amount of liabilities, the figures indicate a soundness of trade in proportion to its extent which is in the main satisfactory. Thus, in 1878 the failures for the first half of the year were 5825, with liabilities of $130,000,000, an increase of 25 per cent. over the year previous. For the first half of 1879 the failures were 4058, with liabilities of $65,000,000. Subsequently, in 1880 and 1881, the failures fell to very moderate figures, viz.: 2497 and 2862, respectively, but this was because the storm had spent itself, and because trade had become restricted to very narrow limits; now, however, the figures for the past half of the present year amount to 3597."

The condition of trade as reflected by the failures that have occurred is commented on in the following manner: "In view of the enormous increase in transactions which the last 18 months have witnessed, the high prices which have been touched for almost every species of property, and, above all, the speculative excesses which prevailed toward the close of 1881, it is a marvelous revelation of the strength and stability of the trade of the country that so few failures, comparatively, have occurred. It must be borne in mind that the number engaged in business has greatly increased; our own records show that there were 730,000 persons in business in 1878, while in 1882 there are 869,000, an increase of 139,000. The proportionate number of failures in 1878 was 1 in every 72 traders, while in the present year, ending with June, the failures have not been more than 1 in every 128 traders. These statistics, therefore, judged by comparison with preceding years, indicate a condition of business so healthy as to create surprise that so much apprehension should be entertained as seems to have been prevalent of late. The losses by bad debts, in proportion to the value of business transacted, never were so small. The significance also of the failures that have occurred has been slight, as the rank and file of casualties are confined to the smaller class, regarding whom some specific cause for failure can almost always be assigned. Excessive competition prevails in certain localities, and the absence of capacity and adequate capital will always result in disaster, but that any general blight or want of favorable conditions exist surrounding the trading community, would seem to be entirely without foundation."

A Large Tank.—An important irrigation work, known as the "Ashti tank," has recently been completed in the Sholapore Collectorate, India. The proposed branch line to connect the Great Indian Peninsula Railway with the town of Pandharpeur, will pass through a portion of the tract to be irrigated by the tank. The principal works consist of an earthen dam 12,709 feet in length and 58 feet maximum hight, thrown across the valley of the Ashti Nala, and forming a reservoir, or tank, which, when full, will have a surface area of rather more than four square miles, and a storage capacity of nearly 1,500,000,000 cubic feet. It is supplied from a catchment basin having an area of 92 square miles, the average annual rainfall being 24 inches. The escape of flood water, after the tank has filled, is provided for by a waste weir 800 feet in length, the crest of which is 12 feet vertically below the top of the dam. There are two canals under construction, starting at a level of 22 feet below the "full supply" level of the tank, one on each bank of the Ashti Nala. They are designed to have an aggregate length of 29 miles, and will command a total area of 25,270 acres of land. The entire cost of the scheme is 6¾ lacs of rupees, and it is estimated that the revenue from irrigation, when fully developed, will yield a return of about 4 per cent. on this outlay. The work may be regarded as a type of the general character of the many large and useful works undertaken for the purpose of relief in the Irrigation Department, and was one of the most important from its position, being situated in almost the center of the area affected by famine, and in the heart of a district in which the effects of the famine were first, and probably most severely, felt. It gave constant employment for almost the entire famine period to a large number of people, the average daily number being, from the commencement to the closure of the work, as a relief work, 9257. The maximum number on any one day was 17,179. Convict labor was also successfully employed on a large scale, and the average daily number of convicts employed on working days varied from 237 in 1878 to 774 in 1880.

Pure Iron.

"Pure iron" is a term often employed, but seldom used with a correct understanding. All merchantable iron contains more or less of other substances than metallic iron, and among them may be mentioned carbon, phosphorus, manganese, sulphur, titanium, &c., and generally some slag. In analytical work it is necessary for the chemist to have some standard upon which to base his calculations, and that generally accepted has been piano-forte wire. The following particulars concerning the purity of some of these irons, given in the *Bulletin* of the Iron and Steel Association, by Mr. J. B. Britton, may be of interest in this connection. Samples of piano-forte wire were obtained directly from leading instrument makers, and those of other kinds of wire and of bar iron were purchased from various dealers. The results were as follows: Nine piano-forte wires, cleaned with emery cloth, gave of pure iron:

98.71	98 39	98.80
98.21	99.42	99.10
99.00	99.01	98 20

A number of others gave corresponding amounts, with an average of 98.76. Nine fine annealed wires, equally well cleaned and and free from rust, gave:

99.50	99.73	99.40
99 46	99.82	99.57
99.26	99,78	99.41

Other samples of the same kind of wire, all of excellent quality, gave about the same, averaging 99.51. Ordinary unannealed wires were found to be much more variable, and a statement in detail of their results is thought to be unnecessary. The same may be said of commercial bar iron. Among the purest of the latter were the sorts made with charcoal, and imported from Norway and Sweden. Nine of these gave:

99.87	99.80	99.60
99.83	99 70	99.62
99.61	99.42	99.56

Imported irons made of the same brand were not found to be uniform in the amount of pure iron. The variation was considered, after some partial examinations, to be due chiefly to differences in contents of carbon, silicon and oxide of iron.

English Iron Making Districts.—Three new iron-making districts will probably be opened in Great Britain during the present year, two furnaces having been completed at Bestwood, in Nottinghamshire, by a company who have secured the mineral rights over some 4000 acres of land, while in the adjoining county of Leicester ironstone has been found. At present, however, there seems to be no great inducement to work it, and 35,000 tons which were raised last year had to be sent away. This is not due to a lack of coal suitable for smelting the stone, since an adjoining coal field, although not large, is a most valuable one, the main seam varying from 12 to 14 feet in thickness. There are, however, strong indications that Leicestershire, with its coal and iron deposits, will at no distant date become an important center of the pig-iron trade. The last of the counties where ironstone has been recently met with is Oxfordshire, and there a large brick plant has been laid down and bricks have been made for the building of a couple of furnaces on the most approved principles by a London company. The only disadvantage connected with the new district is that there is no coal within some considerable distance of it. But the railroad companies hitherto have given favorable rates for coal going into smelting districts, and the necessary supplies could therefore be easily obtained. It appears that the iron trade is gradually extending southward in the direction where it once flourished when ironstone was smelted with charcoal, denuding the extensive forests in that portion of the country of their luxuriant growth of timber.

A Large Output at the Dalziel Steel Works, England.—The Dalziel Steel Works, Motherwell, England, have recently produced a large quantity of finished steel plates. During the day shift of 12 hours, on June 8, two large heating furnaces worked with gas on the Siemens heat regenerative system, were charged with 66 tons of steel, from which were obtained finished steel plates having a total weight of 52 tons and 1 cwt., and during the night shift immediately following, the same two heating furnaces were charged with 67 tons and 3 cwt. of steel, from which a yield of finished plates was obtained amounting to 52 tons and 3 cwt. The total weight of finished plates thus turned out in 24 hours finished and ready for shipbuilders was 104 tons and 3 cwt. During the day shift of the same day the 12-ton steam hammer at the works hammered 73 tons and 7 cwt. of steel ingots, yielding a total of 67 tons of finished steel slabs, and in the course of the following night shift the same hammer worked 79 tons of ingots into finished steel slabs, having a total weight of 73 tons 4 cwt. In this way, starting with 152 tons and 7 cwt. of ingots which were thoroughly hammered, a yield of finished slabs amounting to 140 tons and 4 cwt. was obtained in 24 hours, three heating furnaces being employed in the work. It is claimed that such a large quantity of finished steel plates and slabs has never hitherto been produced in the same number of furnaces and hammered in any other steel works either in Scotland or England.

Carrier Pigeons and Lightships.—The question of connecting lightships with the main land by means of cables has been repeatedly propounded, but owing to the many difficulties opposing its execution, the project will probably never be carried out. A more perfect means of communicating with lightships has been established on the German Coast, the German Admiralty having definitely resolved to employ carrier pigeons in the coast-guard service. All experiments made in this direction by the German Government on the coast of the North Sea since 1876 have been successful. The system of dispatching the pigeons has been most thoroughly tested and found to answer admirably. Two stations for carrier pigeons have been established, and extraordinary accounts are given of the speed of the birds employed. The communication, as now established, is of considerable importance, not only for the lightships themselves, but for incoming vessels if disabled.

INDUSTRIAL ITEMS

NEW HAMPSHIRE.

The White Mountain Freezer Company have broken ground for the erection of a new foundry in connection with their works in Nashua. The foundry will be 75 by 50 feet.

MASSACHUSETTS.

A building in Cambridgeport, fitted up for and formerly occupied as a brass foundry, has just been taken by a concern known as the Cambridge Brass Foundry, who begin operations this week. All sorts of jobbing work will be attended to, as well as steam engine, mill and mining machinery brass work.

The Clinching Screw Company's building is nearly ready for occupancy. Work will soon be commenced on the Estabrook & Wires shop, to be located in front of the Clinching Screw quarters. The screw company are turning out over 600 pounds of screws per day, and at that rate cannot keep up with their orders.

The engine building shop of Mr. Jerome Wheelock, at Worcester, presents a source of great activity. There are now approaching completion a 500 horse-power engine for a grain elevator in Burlington, Iowa, a pair of engines aggregating 1000 horse-power, for a cotton mill at Baltimore, Md., and a 250 horse-power engine for a wire mill at Joliet, Ill., besides a number of smaller ones ranging from 50 to 150 horse-power. A 500 horse-power engine from Mr. Wheelock's shop has just been started in a flour mill at St. Louis, Mo., and another of the same size is being set up at Council Bluffs, Iowa.—*Boston Commercial Bulletin.*

The Mason Machine Works, at Taunton, are to build 500 looms for the Metacomet Mill, Fall River.

The Murdock Parlor Grate Company is erecting a brass foundry at South Carver.

The Lanesborough Furnace of John L. Colby was destroyed by fire in the latter part of June, by which 200 men are thrown out of employment. The loss is estimated at $75,000, on which there is $50,000 insurance.

RHODE ISLAND.

The Follett Machine Works, at Woonsocket, are obliged to run night and day to complete orders already received.

The Mechanics' Machine Company, at Warren, have voted to lease the property.

CONNECTICUT.

The Hendey Machine Company, at Torrington, are putting a new Corliss engine into their works.

The directors of the Corbin Cabinet Lock, New Britain, will commence business in their new factory building on or about September 1.

PENNSYLVANIA.

The rolling mills of Charles Huston & Sons, of Coatesville, have been closed for the purpose of undergoing repairs, which will require about a month for their completion. These are the oldest works in the State, and it will be the longest time they have ever been closed since they started.

The Chickies Iron Company has contracted with the Conewago Iron Company, of Middletown, to manufacture the "Chickies" brand exclusively for them and under their direction. They will then have three furnaces running on the same uniform mixture of ores.

It is reported that Thomas Thomas, of Erie, has secured a lease of the Hubbard, Ohio, rolling mill, and that it will be started under his management in a short time.

The foundations for the new forge of Reily, Seidel & Co., near Harrisburg, are almost completed and the main buildings are being framed. A siding has been constructed from the Pennsylvaniania Railroad, and the work will be pushed to an early completion.

The Allentown Rolling Mills were sold last week to Charles Gilpin, of Philadelphia, on account of the bondholders, who are A. Pardee & Co., for $200,000. The bonded indebtedness was $800,000, of which Pardee & Co. held $600,000 originally, and lately purchased the balance at 50 cents on the dollar. They held book accounts against the concern to the amount of $1,300,000, so that although they appear to have secured a great bargain for $200,000, the works actually cost them about $2,000,000. The works will be run by the owners, and under private management will no doubt be more properly conducted than formerly. The heaviest loser in these mills, next to the Pardees, is General William Lilly, of Mauch Chunk, who sunk a round $100,000 in the concern. All the present stockholders lose every cent they invested.

At the furnace of the Warwick Iron Company, for the week ending Saturday, June 24, 376½ tons of pig iron were manufactured.

Repairs are being made at the Shawnee Rolling Mill, Columbia, and it is reported that it will be converted into a bar mill and resume operations at an early day.

The necessary amount of capital required by the Co-operative Stove Foundry Association at Spring City, to succeed the Keely Works, has been subscribed, and operations will be begun as soon as the machinery and patterns published by the Columbia Company are removed.

PITTSBURGH AND VICINITY.

The Pittsburgh Locomotive Works have been closed for repairs. The machinery is being thoroughly ovehauled, and new shafting, &c., is being put in place. The cost of the improvement will aggregate $7000. The new offices of the works, which have been in course of erection for the last few weeks, will be completed shortly.

It is stated that the two blast furnaces erected at Port Washington, Ohio, in 1874 by a Scotch Company, at a cost of $394,000, were sold a few weeks ago to a Pittsburgh concern, and that they will be removed to Pittsburgh. The Scotch company is said to have sunk $2,000,000 in the enterprise, largely through bad management.

The National Tube Works, of McKeesport, have suspended operations on account of a scarcity of iron. This is the first suspension since the establishment was built, eight years ago. The number of idle men in the town is increased nearly 2000.

A number of establishments shut down last week for repairs, among them Singer, Nimick & Co., Smith, Sutton & Co., Hubbard, Bakewell & Co., and several glass factories.

OHIO.

The Stockwell Screw and Machine Company, of Cleveland, are making important changes in their factory so as to enable them to promptly fill their numerous orders.

The Barney & Smith Mfg. Co., of Dayton, are actively engaged in the construction of passenger and freight cars, from three to four months' orders from old contracts having not yet been filled. They have just received a new steam hammer and employ 1200 men.

Messrs. W. P. Callahan & Co., of Dayton, are extremely busy just at present, and even when running 24 hours per day are not able to fill all their orders in due time. A machine shop, 60 x 80 feet, and a foundry floor, 50 x 120 feet, have just been added.

The Lechner Mfg. Co., Columbus, manufacturers of the Lechner mining machines and anti-friction roller detachable chains for transmitting power, are very busy, and are at this time working upon some good orders for both the chains and mining machines

The East Liverpool Glass Company, limited, have their extensive new works under roof, their furnace built, and work in all departments moving on rapidly toward an early completion. They expect to commence manufacturing by August 1st.

A dispatch from Martin's Ferry says that the new building of the Union Glass Works there was partially destroyed by a great storm which visited that place last week. The extent of the damages has not yet been ascertained.

The Greenwood Machine Co., Columbus, have reorganized under the title of Vulcan Iron Works, with the following officers: W. S. Ide, president; R. T. Clark, manager; James Greenwood, vice-president. The works will hereafter be devoted to the manufacture of a line of machine tools controlled by the new company, prominent among these being the Vulcan steam hammer.

The Youngstown Malleable Iron Company are about making a new addition to their works, 70 feet wide and 150 long. In addition to filling orders for the jobbing trade, the concern will manufacture the following goods: Lambert's malleable iron felloes, Oviatt's "Common Sense" riser and lock, and the New York "German" and "Victor" harness snaps. With the new addition completed and the establishment running full, it will furnish employment to 125 persons.

Members of the Amalgamated Association of Steel and Iron Workers are about to establish a co-operative rolling mill at Leetonia, where a bargain has been closed for the purchase of an old, unused mill. The persons engaged in the enterprise will fit it up at once with the largest improved appliances, and begin work in the fall.—*Trade Review.* This probably refers to the old mill of the Leetonia Nail and Bolt Co., which contains nothing but a few heating furnaces. It is to be hoped that the project will be realized as above.

The glass works of Stoehr, Keech & Co., at Massillon, is nearly completed, and will be ready for operation on August 1. They will make colored table ware, and have four tank furnaces.

Taplin, Rice & Co., Akron, who employ 150 hands, have purchased the Sieberling Machine Works, which are now in running order.

Lawrence Mill, at Ironton, will stop early this month in order to make some repairs, line up machinery, &c. They expect to be shut down about three weeks.

Work has commenced at the Ironton Hoe and Tool Company's establishment

Alice Furnace is running smoothly, and is turning out 60 to 65 tons daily.

ILLINOIS.

All the departments, excepting the blast furnaces, of the Union Iron and Steel Company's works, at Chicago, are in active operation. The new blooming train recently placed in the works is progressing finely, but no definite information can be given as to when the entire works will be running.

The Peru Plow Company has been reorganized, and the works will again be put in operation, with a capital of $125,000.

The Preble Machine Works Co. have taken contracts for a full line of machinery for the Duluth Lumber Co. They have also sold machinery to go into the recently burned out mill of Kaesiberg & Rinn. They have furnished one of their double surfacers to the Diamond Watch Co., and one to H. Paeschke, of this city, and have sold two of their new style siding saws to city mills. This firm have recently increased their facilities of manufacture by adding new tools to their already large outfit.—*Chicago Industrial World.*

The Hardy Rotary Engine Co., Chicago, are putting additional machinery in their works and business with them is good. In addition to the other uses to which they are adapted, their rotary engines are particularly well designed to run the machinery used in making the electrical light.

Chas. F. Elmes, Chicago, is building 25 more Harrison coal-mining machines of the new pattern. These machines, with the recent changes made in them, are calculated to perform more work with less skill on the part of the operator, and also to economize air. These works are still being operated overtime.

It is expected that the Jacksonville Car Works will soon be put in active operation.

KENTUCKY.

The Swift's Iron and Steel Works, of Cincinnati, Ohio, are busy in all branches of their Newport and Riverside mills. Two new sheet trains will be started at Riverside in a short time, while four new double-flue boilers, with gas furnaces, are being erected at Newport.

Ashland Furnace is making 389 tons per week.

INDIANA.

One furnace of the Wabash Iron Company, of Terre Haute, has recently been blown in, and will probably continue working for some time.

Two new furnaces are being added to the plant of the Greencastle Iron and Nail Company, of Greencastle. Besides this extension of capacity, several important changes

IF DEALERS WILL LOOK INTO THIS MATTER OF

JACK SCREWS,

They will find that ours are much better made than any others in market. And furthermore, that by weight they are the cheapest. The same is true of our **Bench Vises.** We could cut down the weight one-quarter and it would hardly be noticed, but in using the Jacks under great strain somebody might get hurt. It is better for all concerned to make reliable goods, and sell them at a price based on quality, so that when they are put on the market they will stay. We guarantee the quality of all our goods, so that dealers take no risk whatever.

Diam. of Screw.	Hight.	Net rise.	Whole hight.	List Price.
1¼ inches	8 inches	4 inches	12 inches	$2.50
1¼ "	10 "	6 "	10 "	3.00
1⅜ "	10 "	5 "	15 "	3.25
1⅜ "	12 "	7 "	19 "	3.75
1⅜ "	14 "	9 "	23 "	4.00
1¾ "	12 "	6 "	18 "	4.25
1¾ "	14 "	8 "	22 "	4.50
1¾ "	16 "	10 "	26 "	5.00
1¾ "	18 "	12 "	30 "	5.50
1¾ "	12 "	5 "	17 "	5.50
2 "	14 "	7 "	21 "	6.00
2 "	16 "	9 "	26 "	7.00
2 "	20 "	13 "	33 "	8.00
2 "	14 "	8 "	22 "	8.50
2⅛ "	16 "	10 "	26 "	9.50
2¼ "	20 "	14 "	34 "	11.00
2⅛ "	24 "	18 "	42 "	13.00

MILLERS FALLS COMPANY

74 Chambers St., New York.

CHAMPLAIN

Forged Horse Nails.

MANUFACTURED BY THE

NATIONAL HORSE NAIL CO.,

Vergennes, Vermont.

HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST NORWAY IRON AND WARRANTED.

WAREHOUSE

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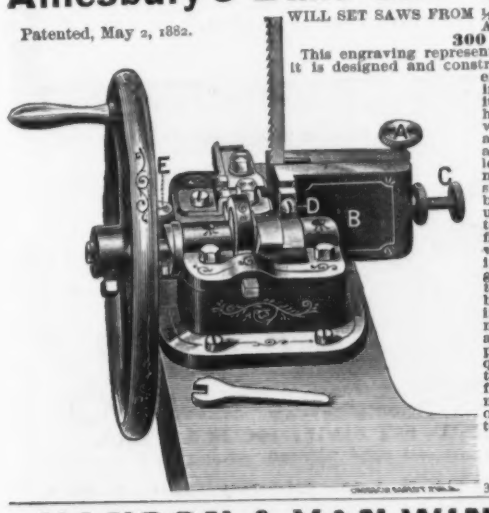
DURRIE & McCARTY, Sole Agents.

Amesbury's Band Saw Setting Machine.

Patented, May 2, 1882.



WILL SET SAWS FROM ¼ INCH TO 2 INCHES WIDE ACCURATELY AT THE RATE OF

300 Teeth per Minute.

This engraving represents our new Band Saw Setting Machine. It is designed and constructed upon entirely new principles, and embodies all the good features of hand-work in combination with the speed and regularity of machine work. The users of band saws have long felt the need of a machine that would hold a narrow saw in a rigid position and set the teeth without straining the blade; and in response to inquiries from many of our leading manufacturers, we have perfected a machine that will set the teeth on any band saw without in any manner affecting the blade. It is arranged to work by an easy, uniform crank motion, and when the tooth to be set is fed into position, the blade is firmly locked between the steel jaws of a vise, and remains immovable while the tooth is set to any degree required. As the crank goes forward the blade is released, when the next tooth is fed up to the dies, the blade again locked in vise, and this tooth set in the opposite direction. All these movements are automatic, and can be carried on at a speed of 300 teeth per minute. The feeder picks up *only the tooth that is to be set*, consequently each tooth is fed to its proper position, *regardless of their irregularity*. No further expense is required outside of the machine, as the band saw is simply hung up over the machine on a wooden bracket, and the lower part left pendant near the floor.

PRICE $25.

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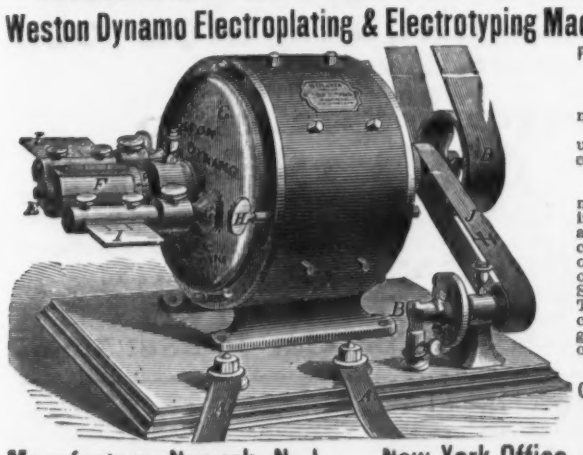
3101 and 3103 Chestnut St., Philadelphia, Pa

HANSON & VAN WINKLE, Sole Agents for Weston Dynamo Electroplating & Electrotyping Machines, Newark, N. J.



For Nickel, Bronze, Brass, Copper and Silver Plating.

Over 1000 machines in use.

Are used by all leading stove manufacturers.

Experienced men sent to put up machines and instruct purchasers.

INFRINGEMENTS.

We call attention to infringements of the Weston Machine in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

MANUFACTURERS OF

Cast Nickel Anodes, Pure Nickel Salts, Polishing Materials.

Manufactory, Newark, N. J. New York Office, 92 & 94 Liberty St.

TO THE WHOLESALE AND JOBBING HARDWARE TRADE.

Send for descriptive Circular and Catalogue of

"THE KING" LEMON SQUEEZER.

AND OTHER HARDWARE SPECIALTIES.

Manufactured by

KYSER & REX,

Variety Iron Works.

Manufacturers of HARDWARE SPECIALTIES, IRON TOYS, NOVELTIES and HOUSE FURNISHING HARDWARE.

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PAINT WORKS, 212, 214 & 216 Race Street. | VARNISH WORKS, Kensington, Philadelphia.

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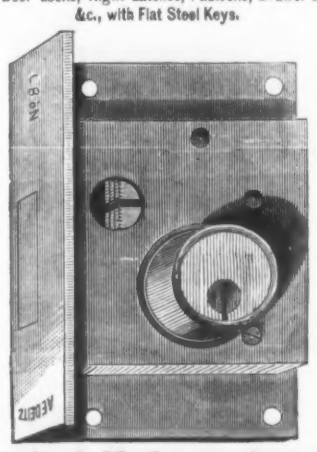
(Successor to Barnes & Deitz,)

Manufacturer of

Store Door Locks, Night Latches, Padlocks, Drawer Locks &c., with Flat Steel Keys.



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Manufacture a full line of

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Counter, Portable, Dormant, Stock and Hay, and R. R. Track

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Call Special Attention to their

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Original Inventors and Sole Patentees of

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STEEL SHUTTERS,

FIRE AND BURGLAR PROOF ALSO IMPROVED

ROLLING WOOD SHUTTERS,

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METALLIC VENETIAN BLINDS.

Endorsed by the

Leading Architects of the World.

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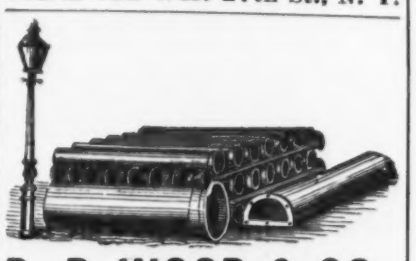

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FOR WATER AND GAS,

Lamp Posts, Valves, &c.,

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400 CHESTNUT STREET.

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Manufacturers of all descriptions of Testing Machines. Tests made daily.

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The best Cider and Wine Mill made. Will make twenty per cent. more cider than any other.

Perfectly Adjustable.

Geared outside.

Prices as low as any first-class mill. Mfrs. of Horse-Powers, Corn Shellers, Feed Cutters, Feed Mills, etc.

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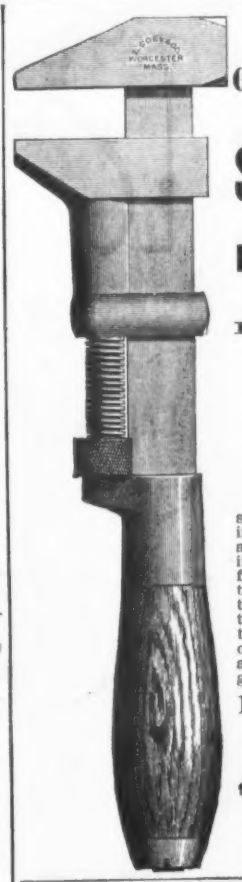

L. COES'

Genuine and Mechanics PATENT

Screw Wrenches

MANUFACTURED BY

L. COES & CO.,

Worcester, Mass.

ESTABLISHED IN 1839.

Our Genuine Wrenches are made with straight bars, full width and enlarged jaw, having ribs cast inside, which strengthen the jaw and give a full bearing on front of bar. These improvements, in combination with our new ferrule, made with double bearings, an iron tube, fitted to the shank and resting against the lower bearings, rigidly held in position by the handle and nut, effectually preventing back thrust of ferrule (see sectional view), verify our claim that we manufacture the heaviest and strongest Wrench in the market. None genuine unless stamped

L. COES & CO.,

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97 Chambers and 81 Reade Sts.,

NEW YORK.

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THE 1882 PENNSYLVANIA LAWN MOWER

Outstrips All Competitors. Premiums Taken Over All Other Mowers.

Every Machine Warranted to Work as Represented.

ALSO MANUFACTURE THE

Best 10-Inch Forward Cut Lawn Mower in the Market, named "Quaker City."

For descriptive catalogue and prices write to

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PRATT & CO., Buffalo, N. Y.	ANDERSON HARDWARE CO., Indianapolis, Ind.
SIMMONS HARDWARE CO., St. Louis, Mo.	WM. FRANKEURTH & CO., Milwaukee, Wis.
HAMILTON & MATTHEWS, Rochester, N. Y.	WALTER S. LUDLOW, Cincinnati, Ohio.
MARKLEY, ALLING & CO., Chicago, Ill.	LLOYD & CLARKE, La Crosse, Wis.
HUNTINGTON, HOPKINS & CO., Sacramento & San Francisco, Cal.	T. M. CLARKE & CO., Atlanta, Ga.
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CARBON POINTS

FOR

ELECTRIC LAMPS,

AND

PLATES FOR BATTERIES

We make a superior carbon for electric lamps; straight, burning with a clear white light, and of the greatest possible durability.

Send for samples and price list.

BOULTON CARBON CO.,

CLEVELAND, OHIO.

PHILADELPHIA SCREW CO., Limited,

Twelfth and Buttonwood Streets, PHILADELPHIA.

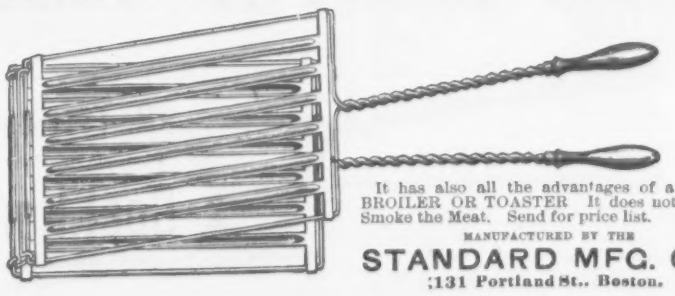
Manufacturers of

IRON & BRASS WOOD SCREWS.

Quality, finish and tests as to strength guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts. A full line in stock.

STANDARD SELF-BASTING BROILER.



It has also all the advantages of a WIRE BROILER OR TOASTER. It does not Fry or Smoke the Meat. Send for price list.

MANUFACTURED BY THE

STANDARD MFG. CO.,

131 Portland St., Boston.

have been and are being made, among which we would mention the addition of a new engine to run auxiliary machinery.

MISSOURI.

The Western Foundry Company, St. Louis, are building a couple of new brick presses for Cheltenham and several nail machines for the Belleville and other nail mills throughout the country.

MICHIGAN.

The following table exhibits, in gross tons, the total lake shipments of iron ore from upper peninsula ports the present season, up to and including June 28, together with the amount shipped during a corresponding period last year:

Name of port	1881.	1882.
Escanaba	277,430	592,29
Marquette	159,118	331.50
L'Anse	12,553	15.67
St. Ignace		3
Total	549,101	949,417

Showing an increase of 400,316 tons.—*Marquette Mining Journal.*

The Advance in Railroad Rates.

On and after July 1st, on business from Boston, New York, Philadelphia or Baltimore, destined to or through St. Joseph, Atchison, Leavenworth or Kansas City, carried via all-rail routes from point of shipment to destination, the following arbitraries to the four Missouri River points last named will apply:

	First.	Second.	Third.	Fourth.	Spl.
Detroit	94	.75	.55	.39	.34
Toledo	90	.71	.52	.37	.32
Chicago	.76	.60	.43	.30	.25
E. Missouri River points	.65	.50	.65	.24	.19

The following rates in cents per 100 pounds will apply on shipments from same seaboard points via all-rail routes destined to Missouri River:

	Machinery or Agr. Impts., C.L. Released.	Portland Cement, C. L.	Fruit, C. L.
Detroit	.40	.22½	.57
Toledo	.38	.24⅔	.53
Chicago	.31	.17½	.30
Missouri River points	.25	.11¼	.98

	Sugar, Syrup and Molasses, lbs. C. L.	L. C. L.	Car-wheels. C. L.	Emigrant Movables. C. L. p. car.
Detroit	.32	.34	.27	.....
Toledo	.31	.32	.25	$75.00
Chicago	.25	.30	.16	52.60
Mo. Riv. pts.	.20	.25	.12	35.00

The establishment of the above rates on sugar, molasses and syrup withdraws these articles from special class, so far as seaboard business is concerned. The rates above quoted will alone be recognized by roads in the association on business from the seaboard. The rates above may apply on business from the following points: From all through-billing points on the Boston and Albany and Hoosac Tunnel lines in Massachusetts; from New York, Albany and Troy on the New York Central Railroad; from Newark, Paterson, Newburgh, Port Jervis, Middletown, Binghamton, Owego, Waverly, Elmira, Corning and Hornellsville on the Erie; from points on the Pennsylvania Railroad between New York and Philadelphia, and from stations on the main line of same road east of Pittsburgh; from stations on the main line of the Baltimore and Ohio Railroad east of Cumberland; from Richmond, Va., and other points on the Chesapeake and Ohio which take Richmond rates. Business from Mobile or New Orleans, received via all-rail or river, destined to Kansas City, Leavenworth, Atchison or St. Joseph, will be subject from St. Louis or East St. Louis to the rates quoted from those points in tariff N. S. 17, dated June 21, 1882, excepting articles classified in said tariff as special. On special class, until otherwise advised, a rate of 18 cents per 100 pounds from St. Louis or East St. Louis may be applied.

On railway equipment from the Atlantic seabord and points common thereto, destined to Kansas City, Leavenworth, Atchison or St. Joseph, carried via all-rail routes to destination, the following arbitraries will apply: Locomotives and tenders, also passenger cars, standard gauge on their own wheels, actual gross weight of locomotive and tender, per 100 pounds. From Detroit, 25 cents; from Toledo, 23 cents; from Chicago, 16 cents, and from East Missouri River points, 10 cents. Locomotives and tenders, narrow gauge, on standard gauge trucks or flat cars, or locomotives and tenders, standard gauge, loaded on trucks furnished by shippers, actual weight in either case per 100 pounds. From Detroit, 30 cents; from Toledo, 27 cents; from Chicago, 18 cents; from East Missouri River points, 10 cents. The rates above named will govern on business destined to Colorado, or any point on the Denver and Rio Grande Railway, whether carried via Council Bluffs or the Southwest. If carried via the routes south of Kansas City the rates from East St. Louis should be: To Emporia, Kan., 4 cents per 100 pounds above rates to Kansas City; to Junction City, 5 cents, and to Halstead, 7 cents.

J. STEVENS & CO.,

Chicopee Falls, Mass. **P. O. Box 224.**

MANUFACTURERS OF

SPRING CALIPERS AND DIVIDERS.

Also, Surface Gauges and Counter Sinks, Stevens' Patent Breech-Loading Sporting Rifles, double and single-barrel; Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunters' Pet Rifles. Our Shooting Gallery Rifle is the favorite everywhere.

THE NEW BLAKE CRUSHER,

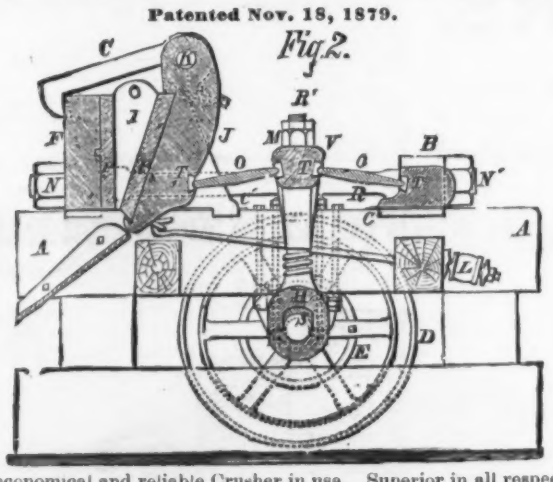
OR

BLAKE'S

CHALLENGE ROCK BREAKER.

Patented Nov. 18, 1879.

Fig. 2.



The most economical and reliable Crusher in use. Superior in all respects to our old style Blake Crushers, and rapidly superseding them and all imitations. For railway ballast, Macadam road making, and crushing of ores of all kinds it has no competitor.

This machine dispenses with cast iron frame and pitman of our old forms. All strains are on wrought iron or steel.

Awarded medals of superiority by judges of American Institute Fair, New York City, 1879 and 1880, where it was exhibited in competition with our old forms of Crusher.

Address,

BLAKE CRUSHER CO.,

Sole Makers,

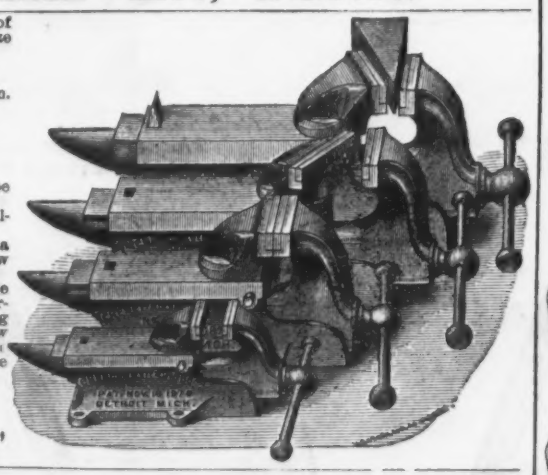
NEW HAVEN, CONN.

The view shows the four sizes of the tool and their comparative size to each other.

RETAIL PRICES.

	Face.	Jaws Open.
No. 1, $3.00	4½x2 in.	4 in.
No. 2, 4.00	6½x3 in.	5 in.
No. 3, 5.00	8 x3½ in.	6 in.
No. 4, 6.00	8½x4 in.	7 in.

Dis. 25 % & 2 %.



It is really a combination of three tools, namely:

First.—An Anvil having a chill-hardened and polished face.

Second.—A Parallel Vise with a square thread, wrought iron screw and jaws that are steel faced.

Third.—It becomes an Adjustable Vise that will hold odd shaped articles as shown in cut, by removing the steel pin. The adjustable jaw may be entirely removed from face of Anvil if it is desired to use the whole surface for any purpose.

Address,

Cheney Anvil & Vise Co.,

DETROIT, MICH.

G. A. CROSBY & CO.,

259 & 261 Randolph St.,

CHICAGO, ILL.,

Manufacturers of all kinds of

Power, Screw, Hand, Foot and Drop

PRESSES,

DIES,

And Special Tools for Tin Can Makers and Sheet Metal Workers.

Send for Catalogue and Price List.

WILLIAMS, WHITE & CO.,

MOLINE, ILLINOIS.

MANUFACTURERS OF

DROP HAMMERS,

HORIZONTAL PRESSES

For Bending Iron. Gang Boring Machines, Tools for Plow Makers. The Justice Hammer.

Send for Circulars.

Drop Press.

Quick Adjustable Tire Bender.

The best and cheapest arrangement for bending tires in the market. Simple in construction, adjustable to any size or diameter tire.

No. 1 bends any tire up to 4½ in. wide.....Price, $10.00

No. 2 bends any tire up to 6 in. wide.....Price, 12.00

IMPROVED AUTOMATIC TIRE AND AXLE UPSETTER.

The most perfect machine for upsetting or shrinking wagon tires, axles, braces, &c., ever placed in the market. Every blacksmith should have one. They are cheaper than any other machine, and one man operates it alone. Liberal discount to the trade and agents. Send for circulars and discount. Correspondence with jobbers solicited.

No. 1 upsets any tire up to 3 in. wide x ¾.....Price, $10

No. 2 upsets any tire up to 4 in. wide x ¾.....Price, 12

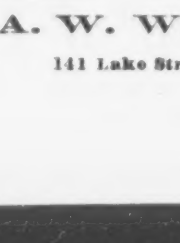
For sale by RUSSELL & ERWIN MFG. CO., 45 Chambers st., New York, and E. C. TROMBLY & CO., Plattsburgh, N. Y. (P. O. Box 310), Mfrs. and Proprietors.

The "Salem" Elevator Bucket.

FIRST PREMIUM AT THE

MILLERS' INTERNATIONAL EXHIBITION.

What Users Say of It:



We consider the "Salem" the "Best in the market." What better testimonial can you have than the size and frequency of our orders?

THE LINK BELT MACHINERY COMPANY, Chicago.

We find the "Salem" to be first-class in every respect.

R. D. HUBBARD & Co., Mankato, Minn.

We like the "Salem" Bucket. Ship us 55 more at once.

STRAITSVILLE CENTRAL MINING Co., Columbus, O.

It is nearer Perfection in every respect than any other Bucket made.

SAMPLE MAILED FOR **15 cents (stamps.)**

W. J. CLARK & CO., Sole Mfrs.,

Salem, Ohio.

New York Office, 9 Cliff Street.

Please name this paper.

NOTICE.

To the Hardware Trade, Wholesale and Retail.

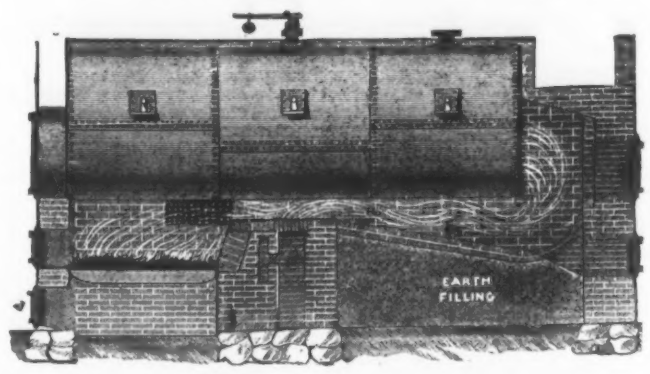
Before buying, send to me for quotations. Will give special figures lower than market rates on a large line of Shelf Hardware and Tinware. Have also an immense stock of special job lots in which I can give decided bargains.

A. W. WHEELER,

141 Lake Street, CHICAGO.

JARVIS PATENT FURNACE

For Setting Steam Boilers.



Economy of Fuel, with increased capacity of steam power.

The same principle as the SIEMENS PROCESS OF MAKING STEEL; utilizes the waste gases with hot air on top of the fire.

Will burn all kinds of Waste Fuel without a blast, including screenings, wet peat, wet hops, sawdust, logwood chips, slack coal, &c.

Send for circular.

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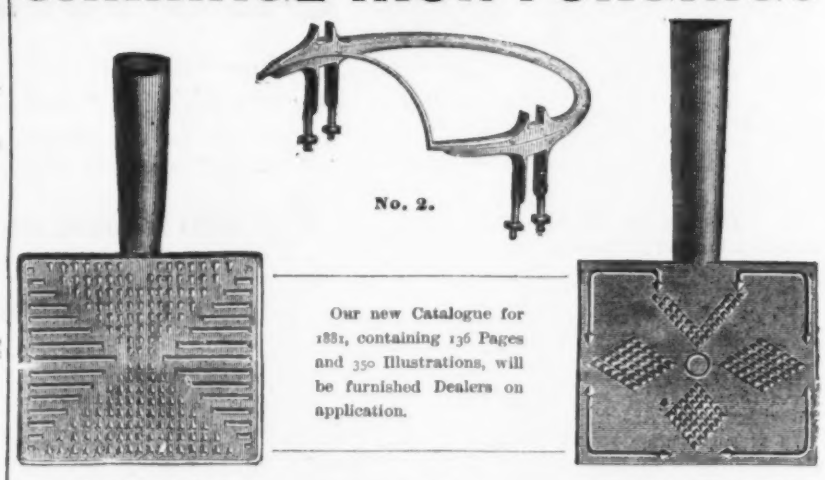
Manufacturers of

CARRIAGE IRON FORGINGS



No. 2.

The "Derby." **The "Diamond."**

Our new Catalogue for 1881, containing 136 Pages and 350 Illustrations, will be furnished Dealers on application.

COMPRISING

FIFTH WHEELS, BODY LOOPS, STAY ENDS, OFFSETS, SLAT IRONS, REACH PLATES, JOINT ENDS, STEPS, &c.

WE GUARANTEE OUR GOODS.

THE "SIMONDS" SAWS,

INCLUDING

CIRCULAR, GANG, MULAY, DRAG AND CROSS-CUT,

Are manufactured under a new system—covered by many patents—which produces a result hitherto unequaled.

THE "SIMONDS" KNIVES,

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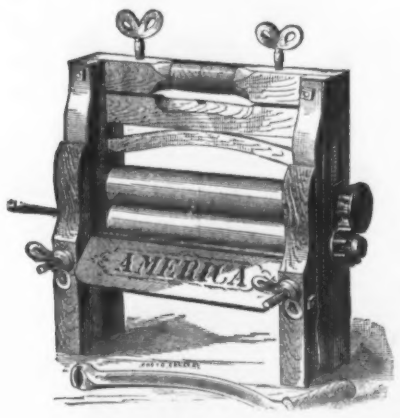
Are warranted of a superior quality.

Communications or orders for Saws, for Knives, or for Repairing will receive prope attention if addressed to

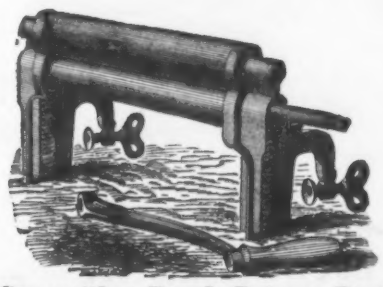
SIMONDS MANUFACTURING CO., Fitchburg, Mass

Or, Corner Canal and Washington Sts., Chicago, Ill.

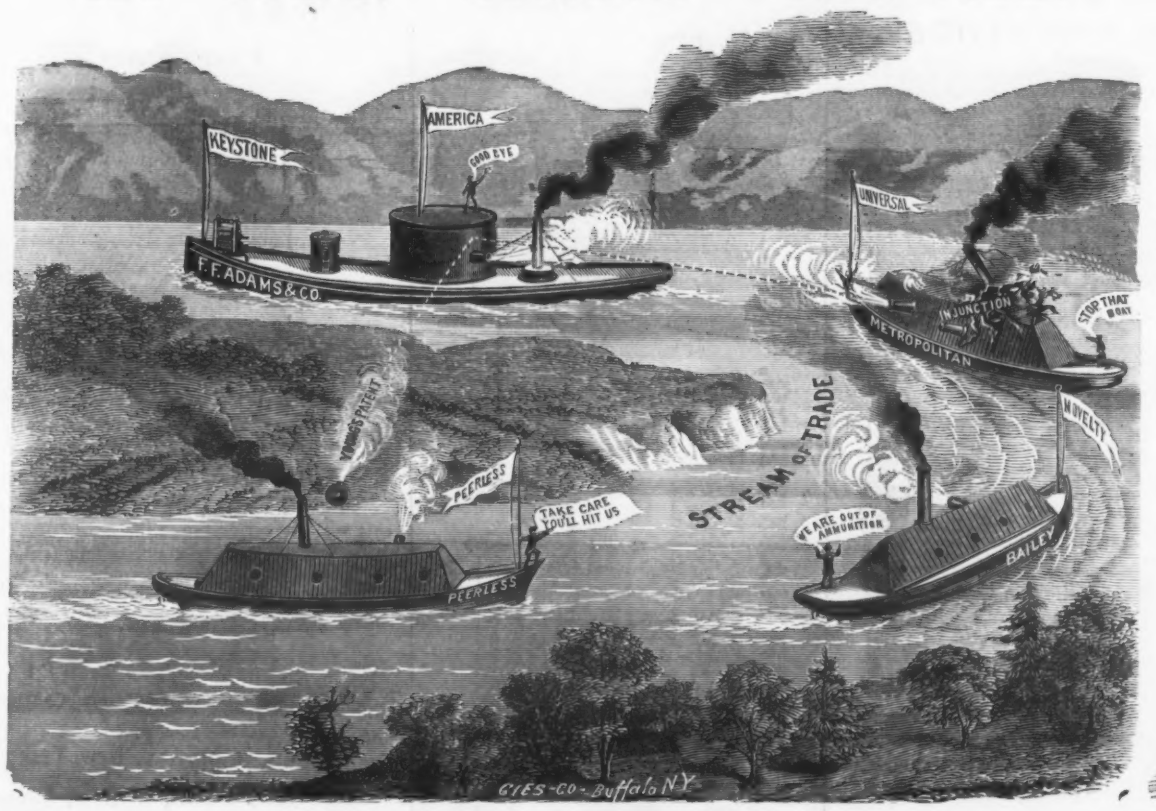
IN HOC SIGNO VINCES.



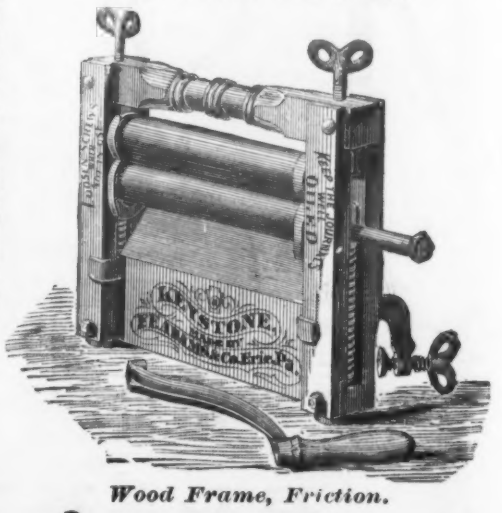
America Wringer.



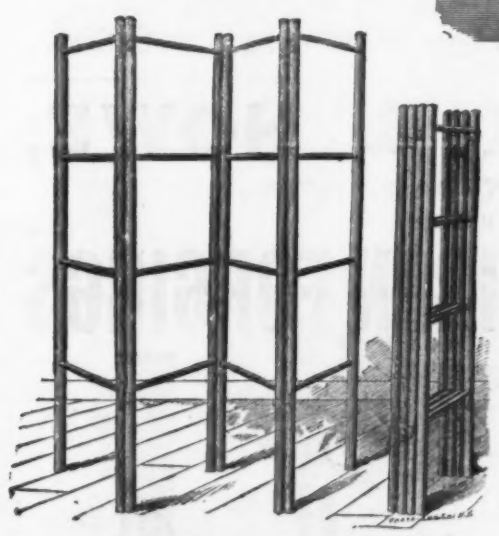
Can neither Break, Rot nor Rust.



Wood Frame Cog Wheel.



Wood Frame, Friction.



Reversible Clothes Horse.
This horse is made of Basswood Timber and has Webbing Hinges.

F. F. ADAMS & CO., LIMITED,

ERIE, PA. · · · · U. S. A.

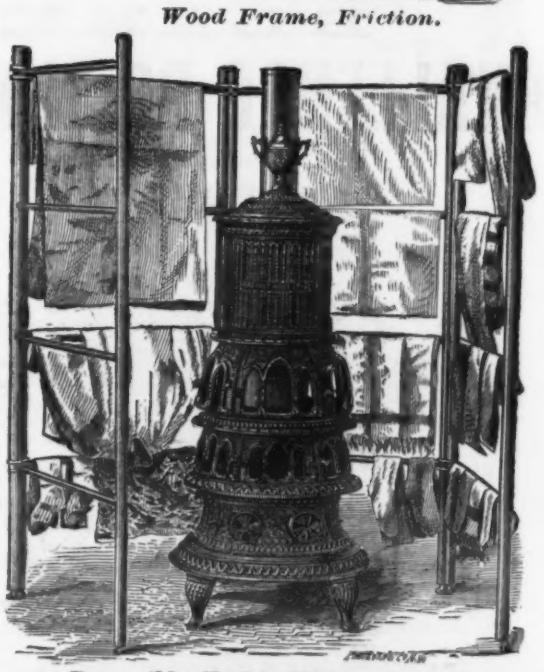
Manufacturers of all kinds of

CLOTHES WRINGERS.

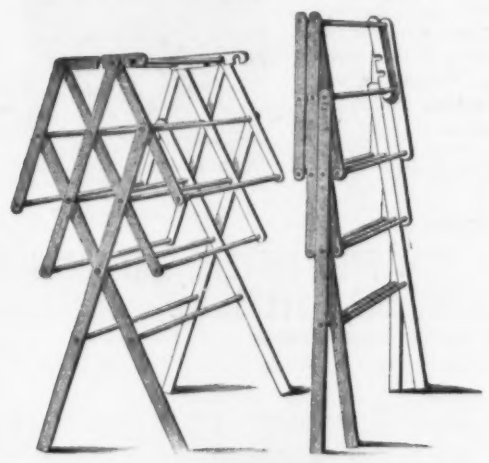
Our "KEYSTONE" Wringers are too well known to need comment. Our new Wringer, "AMERICA," without doubt is the cheapest Wringer for the money in the market. We also manufacture various other household articles and useful inventions.

Our Motto is Small Profits and Large Sales.

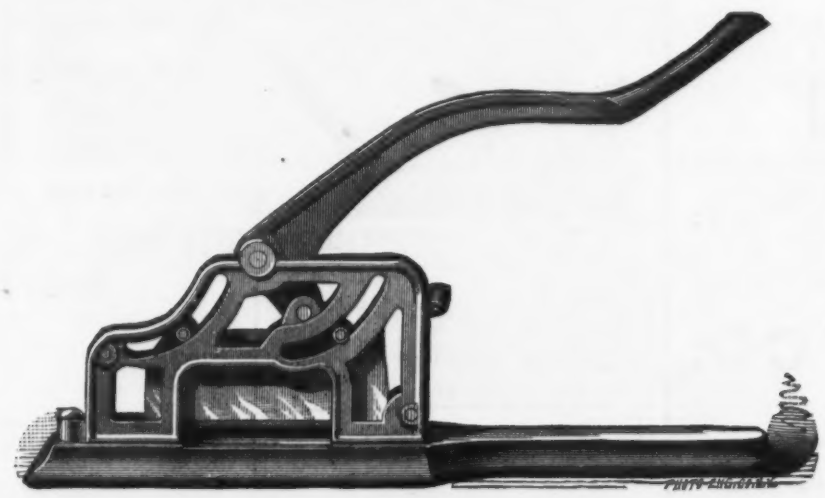
Send for Catalogue and Price List.



Reversible Clothes Horse. Patented.
This Horse is made of Ash Timber, and has a new Patent Hinge.

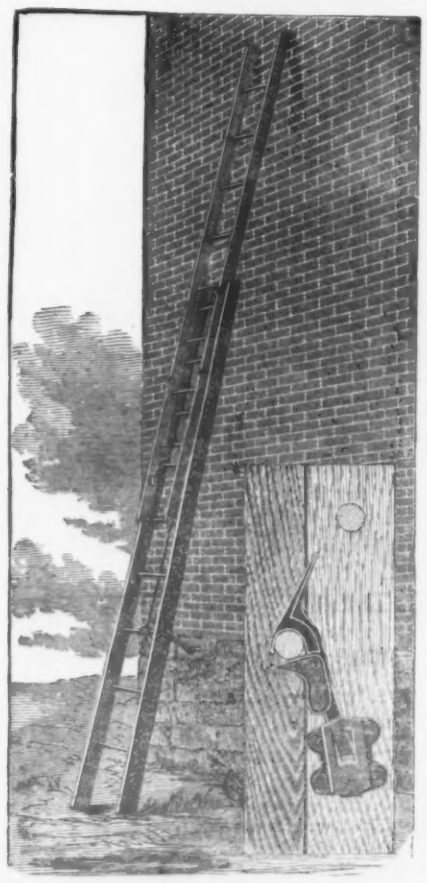


Excelsior Clothes Horse.

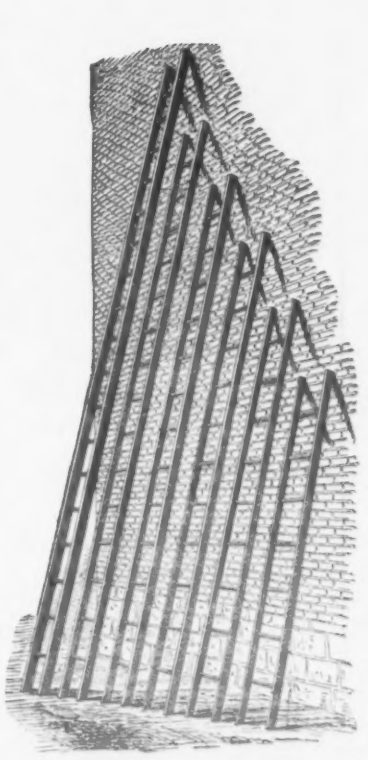


Acme Tobacco Cutter, No. 10.
Best Cutter in the Market. Retail Price, $1.25.

The Adams Bread Cutter. Patented.
Something New that is Worthy of Your Attention.



Lovell's Patent Extension Ladder
Patented Oct. 22, 1864, and Aug. 4, 1874.



Common Ladders.
From 10 to 26 feet.

Adams Safety Step Ladder.

Lovel's Patent Extension Ladder.

LAMBETH'S
PATENT IMPROVED
FLY FAN.

OVER 100,000 NOW IN USE.

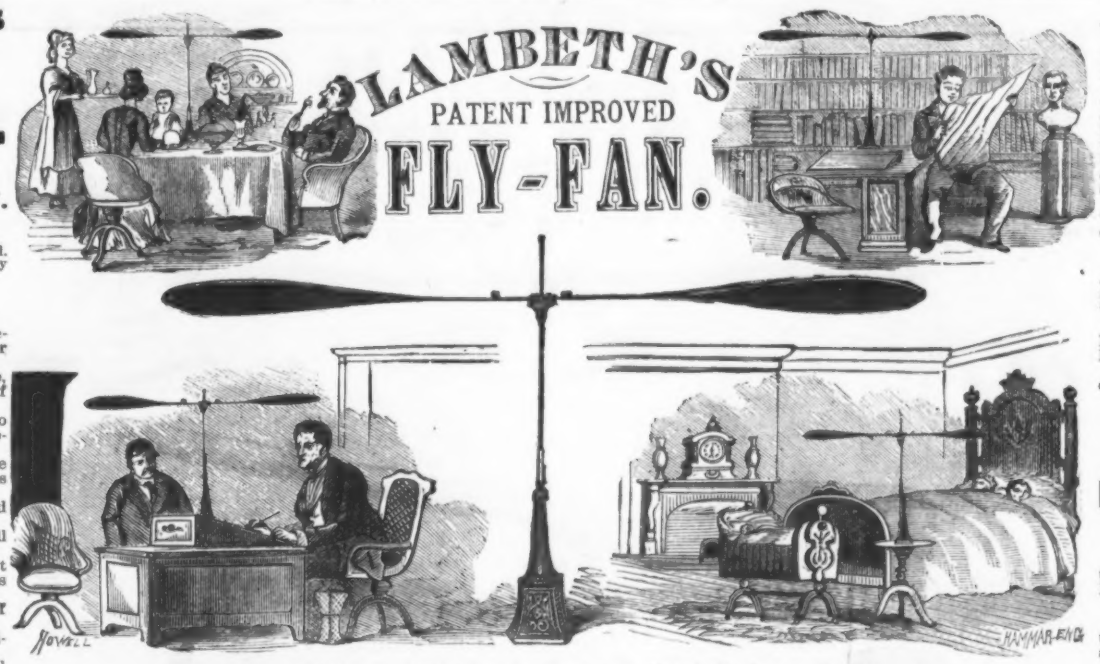
FOWLER PAT. FLY FAN.

OVER **50,000** NOW IN USE.

Among the best and fastest selling articles ever introduced. Sold by dealers in Housefurnishing Goods, Hardware, Crockery &c.

☞ The luxury of the age.
☞ No home complete without one.
☞ Equally a blessing in Dining Room and Chamber.
☞ It drives all flies away by the shadow and movement of the wings while revolving, and is indispensable for the enjoyment of a good meal or nap.
☞ The machine is self-acting, keeps flies off the table, winds up like a clock, and runs about one hour and a half at each winding.
☞ For convenience, a key is attached to the case, so that it can be rewound at any time, and run as long as desired.
☞ It is light and portable, a perfect substitute for the old fly brush in the hands of a servant, and occupies less space on the table than a caster.
☞ It fills a long-endured want in the household, and is so simple that a child can operate it.
☞ The first cost is a permanent investment, as it will last many years.
☞ It has been adopted in a large number of the first hotels and private families, and wherever introduced has given entire satisfaction.
☞ It is easily set on a bed or chair to keep flies off children or the sick.
☞ To the invalid, in summer, it will be a most welcome companion.

Send for Illustrated Circular containing testimonial letters and fuller description.



Patented May 12, 1874; Jan. 16, 1877; April 17, 1877; March 9, 1880; June 8, 1880; June 29, 1880; Nov. 23, 1880.

PHILADELPHIA, June 8th, 1882.

TO THE TRADE:

Dear Sirs.—Having obtained *sole* control of the Fowler Fly Fan, heretofore manufactured and sold by Mr. W. R. Lafourcade, and recently advertised by him as the "Fowler Fly Fan with all its improvements," I will sell what I have of them in stock to the trade at the prices I have hitherto quoted for the same this season. When this supply is exhausted, however, there will be no more of this style manufactured, as I shall hereafter make only my improved Fans, known as the "Lambeth Patent Improved Fly Fans," which are much superior in durability, efficiency and beauty, as shown by testimonial letters.

As I am now the sole proprietor and manufacturer of the only Fly Fans that are made, uniform prices at the rates established by me this season will be strictly observed, viz.:

RETAIL PRICE.

Lambeth's Pat. Imp'd Fly Fan, No. 1, each,..... $1.00
Fowler Fly Fan, each,..... 3.00

TRADE PRICE.

Lambeth's Pat. Imp'd Fly Fan, No. 1, by single doz.... $36.00
Fowler Fly Fan, by single doz..... 27.00

Hoping you will favor me with your orders for this indispensable household comfort.

I am very truly yours,

S. W. LAMBETH,

SOLE PROPRIETOR AND MANUFACTURER OF

Lambeth's Pat. Imp'd and Fowler Fly Fans,

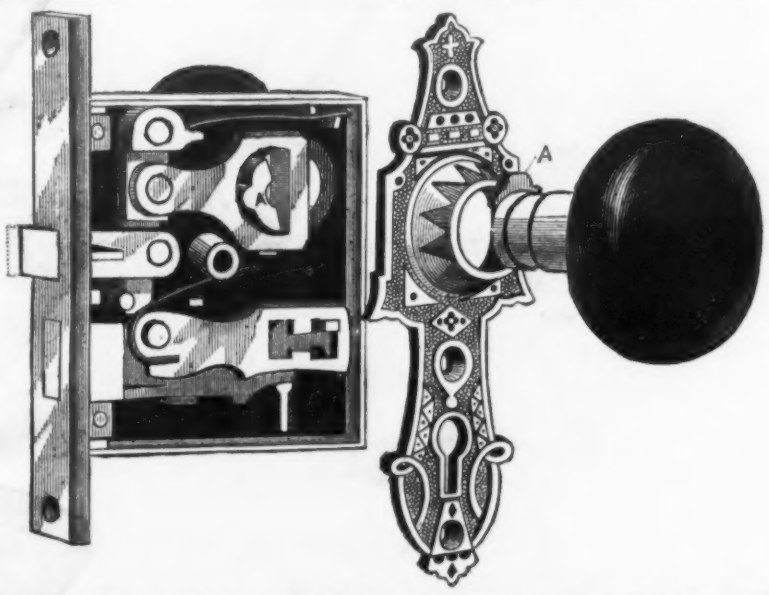
No. 42 South 3d St., Philadelphia, Pa.

N. B.—Mr. W. R. Lafourcade has sent the following letter to the parties from whom he has solicited orders for the Fowler Fly Fan:

PHILADELPHIA, June 5th, 1882.

Sir.—Mr. S. W. Lambeth having obtained sole control of the Fowler Fly Fan with all its improvements, I will be unable to fill your orders as I undertook.

Yours truly,
W. R. LAFOURCADE.



NILES PATENT MORTISE DOOR KNOBS AND LOCKS.

An entirely new departure in the Manufacture of Locks.

NO SPINDLE! NO SCREW IN SHANK! NO WASHER! NO HUB IN LOCK
NO LOST MOTION! NO FRICTION! QUICK ACTION! EACH KNOB INDEPENDENT!

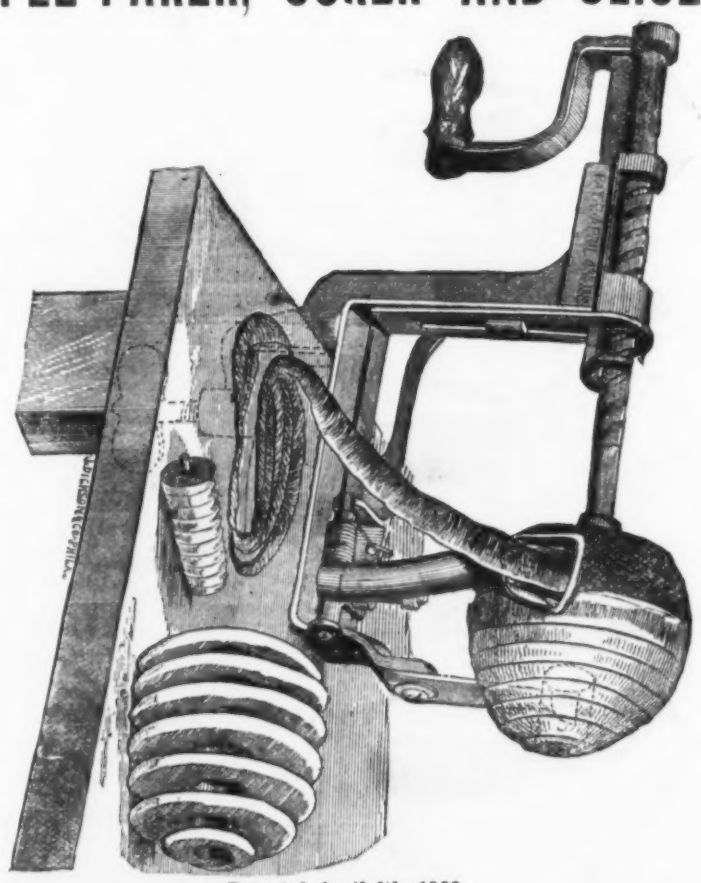
All Objectionable Features Dispensed With!

In use and indorsed by the leading Railways in the Country, and also by prominent Architects and Builders.

Send for Catalogue and Price List.

CHICAGO HARDWARE MANUFACTURING CO., Exclusive Manufacturers,
29 Erie Street, Chicago, Ill.

PENN HARDWARE CO.'S
APPLE PARER, CORER AND SLICER.



Patented April 4th, 1882.

The Successful Parer of 1882.

MANUFACTURED BY THE
PENN HARDWARE COMPANY, READING, PA.

DOUBLE ACTION RATCHET SCREW DRIVER.

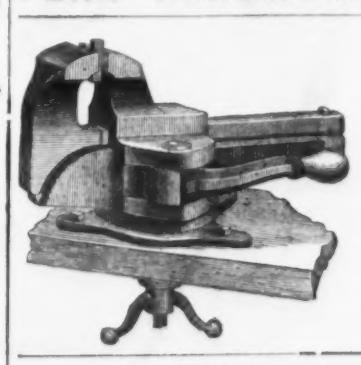
ONE OF THE VERY BEST TOOLS EVER INVENTED.

It combines greater Strength, Convenience and Durability than was ever obtained in a Common Driver. Sells readily and gives Perfect Satisfaction.

Trade supplied by the principal Jobbers throughout the U.S. or by the manufacturers,

GAY & PARSONS, - - - Augusta, Maine.

FLAGLER, FORSYTH & BRADLEY, Agents, 298 Broadway, New York. ☞ Send for Price List.



STEPHENS
PATENT VISE.

The most durable, and the only solid quick-working Vise, with automatic taper jaw attachment.

Will very soon pay for itself, in saving of time and labor.

For sale by the trade.

OFFICE:

41 Dey St., New York, U. S. A.

THE
DEXTER
CARRIAGE SPRING

Combines Strength, Durability, Beauty. | It is Graceful, Noiseless, Light and Easy.

The **DEXTER SPRING** is the most perfect Carriage Spring ever invented. Wherever it is known it is rapidly superseding all others for pleasure vehicles. It is especially recommended for use on the rough roads of new countries, as its peculiar construction relieves the strain on the vehicle and shock to the passenger, while the high grade of material used reduces the probability of breakage to a minimum.

For circulars, prices, &c., address

DEXTER SPRING CO., Hulton, near Pittsburgh, Pa., U. S. A

THE STANDARD
WOOD TRACK
HANGER
OF
AMERICA.

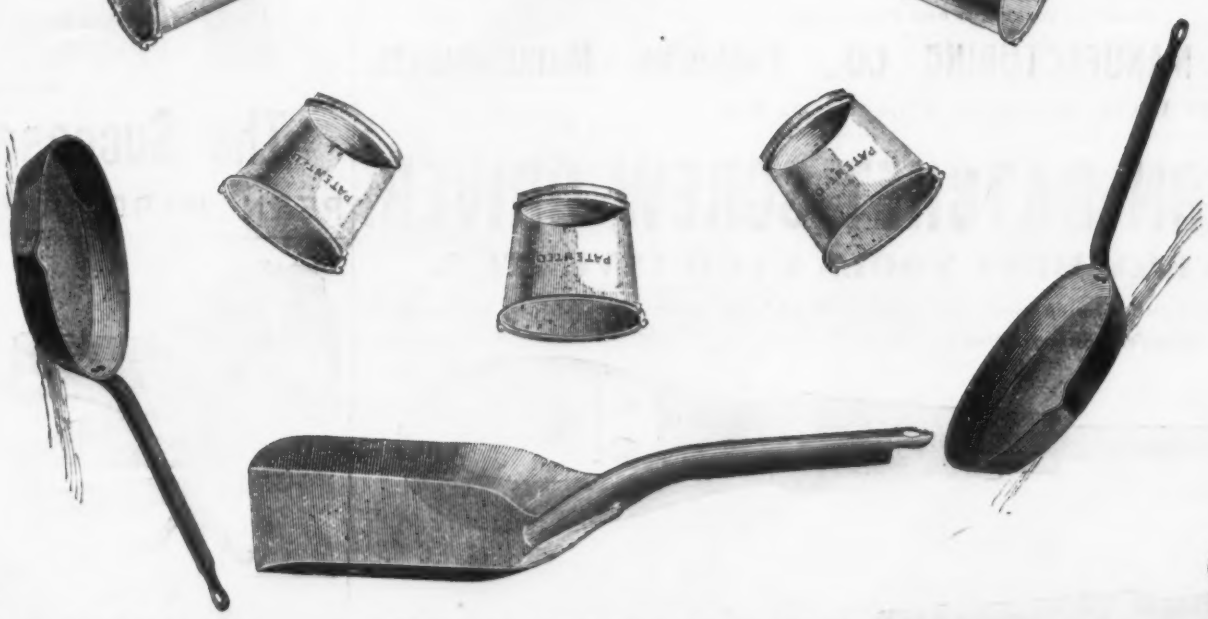
For Sale by the Wholesale Trade Generally, or the

KIDDER SLIDE DOOR HANGER CO.
Sole Manufacturers,
ROMEO, MICHIGAN.

THE
"KIDDER."

V. G. HUNDLEY,
PROPRIETOR OF
NORTH CAROLINA HANDLE CO.,

MANUFACTURER OF
Handles and Spokes,
79 Reade Street and 97 Chambers Street, ... NEW YORK.
HARDWARE COMMISSION MERCHANT.



IRON CLAD MANUFACTURING CO.

22 CLIFF ST., New York.

LISTS, TERMS AND DISCOUNTS ON APPLICATION.

EVERY RETAIL STOVE OR HARDWARE HOUSE IN THE U. S. CAN EASILY SELL DURING THE SEASON ONE OR MORE GROSS OF

THE

Recognized Standard of the World for Cleaning the Nickel Plates on Modern Stoves,

Upon many of which there is more Nickel than iron surface to clean. It is also sold with the guarantee that it is the

BEST AND QUICKEST CLEANER OF SILVERWARE EVER PRODUCED.

PAYS 50 PER CENT. PROFIT.

Price, Per Dozen, $2. Retails at 25 Cents Per Bottle.

ORDER FROM THE WHOLESALE HOUSES.

MANUFACTURED ONLY BY

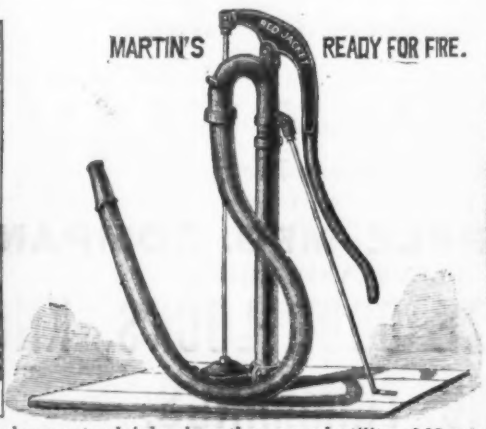
THE LUSTRO CO.,

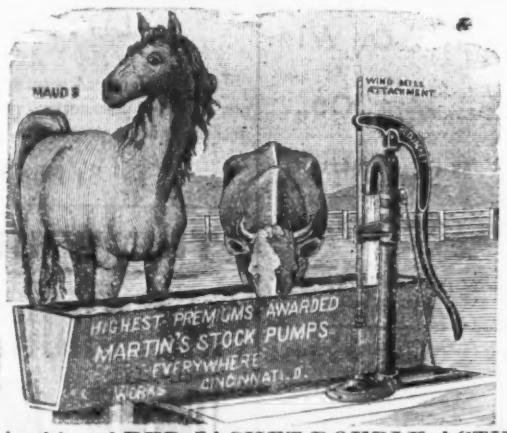
171 Duane Street, New York.

FRED. W. GARDNER, President. JOHN T. BROWN, Treasurer.

LUSTRO

BEWARE OF IMITATIONS.





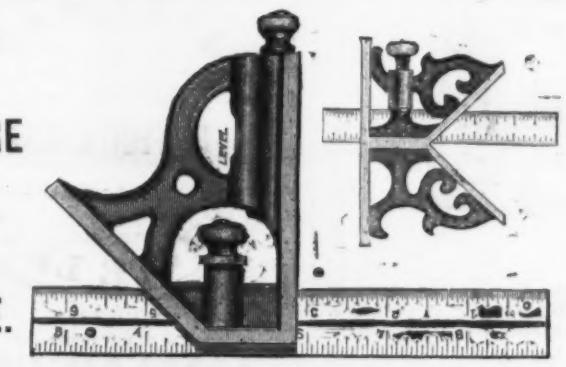
THE ONLY PUMP THAT CAN BE REPAIRED WITHOUT REMOVING PUMP FROM WELL OR CISTERN.

GENERAL PURPOSE PUMPS. The above cuts plainly show the general utility of Martin's celebrated **RED JACKET DOUBLE-ACTING FORCE PUMPS.** Highest Award wherever exhibited, including the Ohio State Fair and the great Cincinnati and Atlanta Expositions of last fall, over all competitors. For descriptive catalogue and price list to agents, address

JOHN P. MARTIN & CO., Cincinnati, Ohio, U. S. A.

CHAPLIN'S PATENT

TRY SQUARE AND MITRE. SPIRIT LEVEL AND PLUMB.



Center Square and Draughtsman's T Square.

A TOOL NEEDED BY EVERY WORKMAN.

Having an **ADJUSTABLE BLADE OR TONGUE** it supplies the place of an

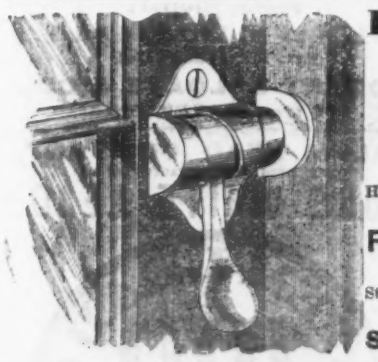
ENTIRE SET OF COMMON TRY SQUARES

At a small fraction of their cost, and can be used for an almost endless variety of purposes. Send for Price List.

STANDARD TOOL CO.,

ATHOL, MASS.

SOLE MANUFACTURERS AND OWNERS OF THE PATENT.



HYDE, AYER & CO.,

Sole Manufacturers of the

Practical

WINDOW SASH FASTENER

AND LOCK COMBINED.

Holds the Window at any point, prevents all rattling, and locks the same when down.

Practical Clothes Line Holder,

AND PATENT SPECIALTIES.

Stoddard's Combined Dividers and Calipers, Improved Inside and Outside Calipers, Tools, &c., &c.

SPRINGFIELD, - - - MASS.

Stanley Rule & Level Co.,

MANUFACTURERS OF

Improved Carpenters' Tools.

FACTORIES

New Britain, Conn.

WAREROOMS,

29 Chambers St., New York.

Malufacturers of **Bailey's Patent Adjustable Planes.**
General Agents for the sale of **Leonard Bailey & Co.'s "Victor Planes."**
Manufacturers of **"Defiance" Patent Adjustable Planes.**

CAPITAL CITY MALLEABLE IRON CO.,

BROADWAY & FOURTH AVE., ALBANY, N. Y.,

MALLEABLE & GREY IRON CASTINGS

For all Kinds of Agricultural Implements, Stoves, &c.

ALL MALLEABLES MADE FROM IMPROVED AIR FURNACES.

ESTABLISHED 1857.

E. C. ATKINS & CO.,

INDIANAPOLIS, IND.

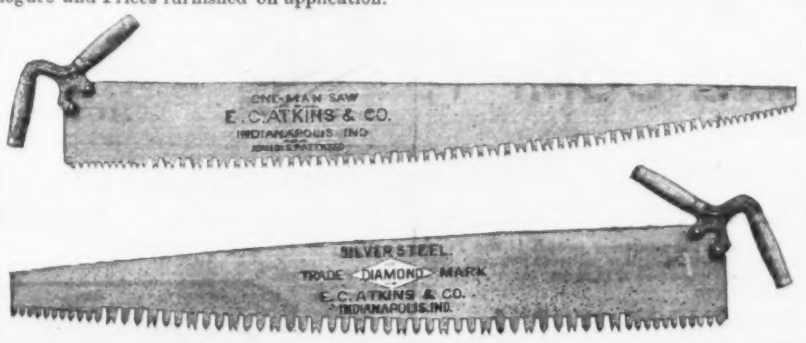
We invite the trade to note the special merits possessed by our

ONE-MAN CROSS-CUT SAWS,

With Atkins's Patent Double Handle

Attached, as shown in the accompanying cuts.

These are illustrations of our "Silver-Steel Diamond" and "Champion." We also keep constantly in stock Saws of same pattern as the "Diamond," made of Cast Steel. Catalogues and Prices furnished on application.



N. B.—We are the Original and Sole Makers of Silver-Steel Circular and Cross-Cut Saws.

The Boss Lemon Squeezer.

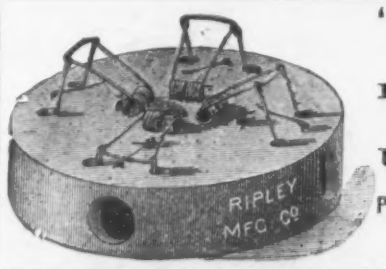
Malleable Iron and Tinned (pure Tin).

Acknowledged the Best.

Patent Applied For.

JOHN J. TOWER, 96 Chambers St., New York.

ORDER EARLY.



"COMMON SENSE" MOUSE TRAP.

BEST IN MARKET.

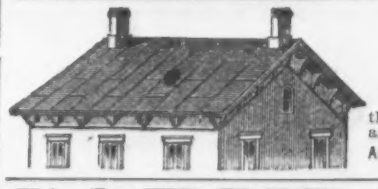
For Home & Export Trade.

RIPLEY MFG. CO.,

Unionville, Ct., U. S. A.,

Manufacturers of

Porcelain-Lined Lemon Squeezers, Mallets, Rosewood Faucets, Patent Boot Jacks and Hardware. Fine Wood Turning a Specialty.



IMPROVED SHEET IRON ROOFING.

Best quality and simplest plan in use.

MANUFACTURED BY

T. C. SNYDER & CO., Canton, Ohio.

Cheaper, stronger, and less liable to get out of repair than tin. Any mechanic can apply it. Sample Circular and Price List free by mail at request.

Also, Agents for LOWE'S METALLIC PAINT. Best and Cheapest in the World.

SABIN MFG. CO.,

MONTPELIER, VT., MANUFACTURERS OF

DOUBLE-ACTING SPRING BUTTS,

SABIN'S LEVER DOOR SPRINGS, For heavy doors,

BOSS AND CROWN SPRINGS, For light doors,

Send for Catalogue.

Patented Articles of

MALLEABLE IRON.

NEW pattern Heavy Screw Clamps, strongest in the market.

Hammer's Malleable Iron Oilers, 3 sizes.
Hammer's Mall. Iron Hand Lamps.
Hammer's M. I. Hanging Lamps.
Hammer's Adjustable Clamos.

For sale by all the principal Hardware Dealers.
Send for Price List.

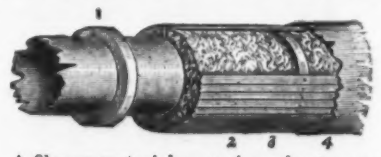
MALLEABLE IRON CASTINGS

Of superior quality, and Hardware Specialties in Malleable Iron made to order.

HAMMER & CO.,

Branford, Conn.

Mineral Wool.



A fibrous material, encasing about 90 per cent. of its volume of air, and therefore a superior

NON-CONDUCTOR

OF

HEAT AND SOUND.

Being made from the slag of blast furnaces, it is fire-proof and durable in contact with heated surfaces. Readily applied.

Ordinary Grade, 24 lbs. per cubic foot.
Extra Grade, 24 lbs. per cubic foot.

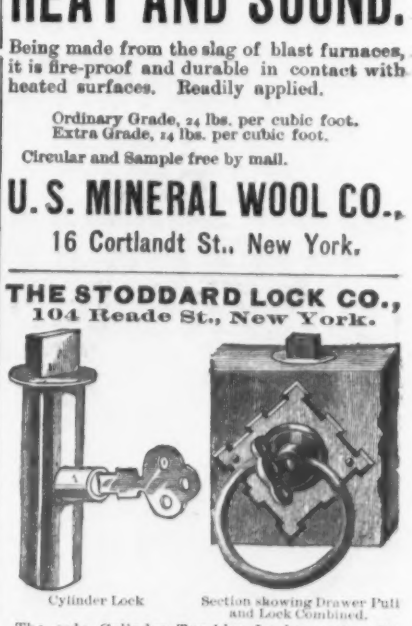
Circular and Sample free by mail.

U. S. MINERAL WOOL CO.,

16 Cortlandt St., New York.

THE STODDARD LOCK CO.,

104 Reade St., New York.



Cylinder Lock — Section showing Drawer Pull and Lock Combined.

The only Cylinder Tumbler Locks made. No screws or nails required in applying. Extra long throw of bolt. Elegant finish, and great security.

Our **Keyhole Drawer Pull** is the latest novelty out. Inclose business card for price list. For sale by the jobbing trade.

THE "EDDY" STRAIGHTWAY

VALVES.

ALSO,

FIRE HYDRANTS.

Axe, Hatchet, Powder and Brush Machinery.

THE EDDY VALVE COMPANY,

WATERFORD, N. Y.

BENTON, FAULKNER & BIRD, N. Y. Agents
C. H. & W. H. MIDDLETON, Phila. Agents.

COAL VASES

12 PATTERNS.

With and Without Fire

Stand Attachment.

ARTISTIC DECORATIONS.

Jobbing Trade Solicited.

MANUFACTURED BY

The Geo. D. Winchell Mfg. Co.,

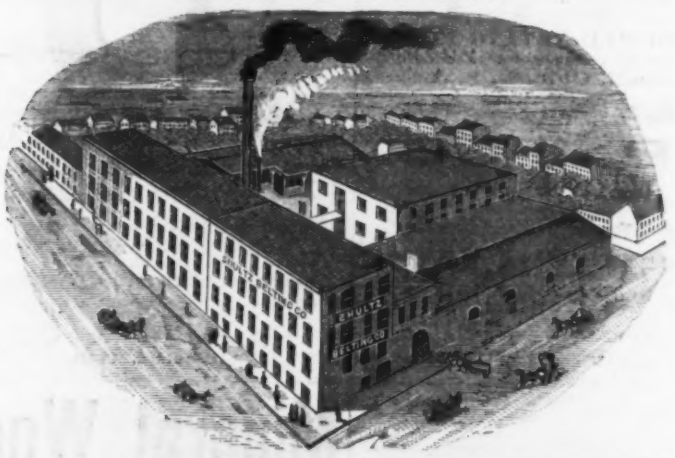
123 Walnut Street,

CINCINNATI, O.

Send for Catalogue.

Office and Factory, Cor. EASTON & BARTON Sts.,

ST. LOUIS.



SHULTZ BELTING COMP'Y,

MANUFACTURERS OF

Shultz Patent Fulled Leather Belting And Lace Leather.

Our BELTING is made of Leather, tanned on the surfaces only; the interior (which is the Fibre and strength of the hide) is not tanned, but Rawhide fulled and softened by our patented process. Our Belting is more pliable, and hugs the pulley better, and transmits more power than any other belt.

Our Rawhide Lace Leather, and Belt Grease, are the best in use.

VALVES FOR FURNACES and IRON WORKS.

We make out of our Patent Leather, Valves for furnaces which we claim last five times as long as any other. We will furnish for trial $5.00 worth, without charge, to each of the first ten parties sending us sizes. We also send a useful little book on Belting free, on application. Agents in all important cities.

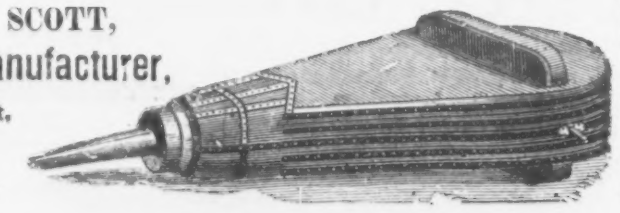
GEO. M. SCOTT,

Bellows Manufacturer,

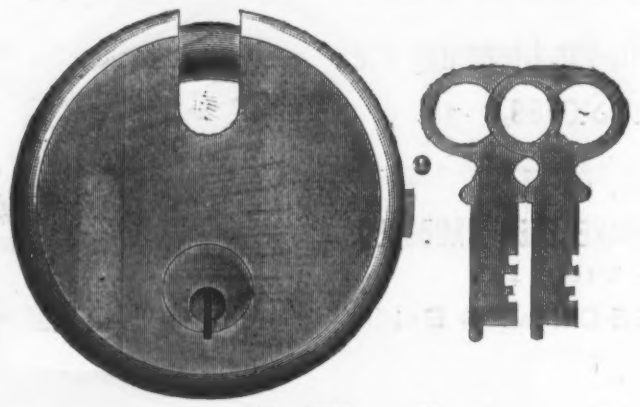
Johnson Street,

Cor. 22d St.,

CHICAGO, ILL.



STILL ANOTHER



(No. 4003.)

SELF-LOCKING PAD LOCK

BY THE

EAGLE LOCK CO.,

Terryville, Conn.

It is made of wrought brass, and is furnished either brass or nickel-plated. It is novel in its construction, perfect in its operation and very secure. It is locked by a slight pressure on the projection shown on the right side of the cut.

For Sale by Hardware Jobbers Throughout the Country.

THE WHIPPLE MFG. COMPANY,

CLEVELAND, OHIO,

FINE BRONZE DOOR LOCKS, KNOBS AND TRIMMINGS.

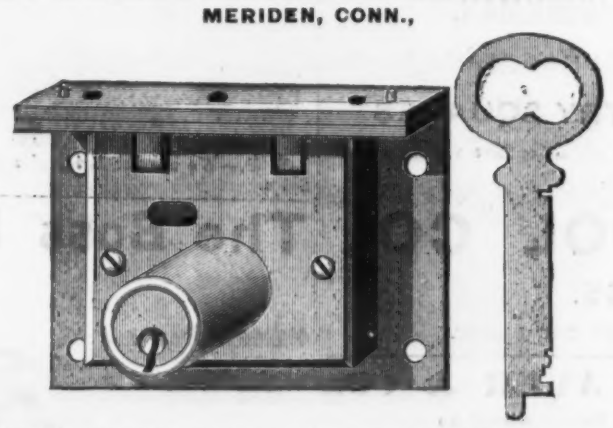
REAL BRONZE BUTTS, STORE DOOR HANDLES with ORNAMENTAL BRONZE FRONT LOCK AND LATCH,

And a general line of

BUILDERS' HARDWARE.

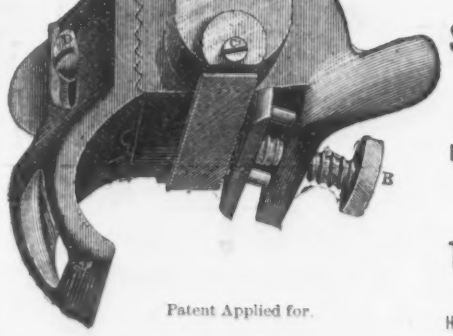
THE CHARLES PARKER CO.,

MERIDEN, CONN.,



MANUFACTURERS OF CABINET LOCKS.

The "Challenge" Lawn Mower Sharpener.



Patent Applied for.

A NEW and much needed article, and adjustable to any Lawn Mower made.

SIMPLE AND RELIABLE!

CHEAP AND DURABLE!

Per doz. $12.00. Discount to the Trade.

EVERY DEALER SHOULD HAVE THEM IN STOCK.

For Sale by the Trade Generally.

THE CHALLENGE MFG. CO.,

PLAINFIELD, N. J.

HORACE F. SISE, Agent, 100 Chambers St., N. Y.

ALL MAKES OF

BARBED FENCE WIRE,

Stretchers, Diggers, Staples, &c. And

LOWE'S METALLIC PAINT,

The Great Railroad Paint.

CHARLES E. McBRIDE, *Eastern Agent, 197 Pearl Street, New York. Also, Boston, Philadelphia and Baltimore.*

John T. Lewis & Bros.

No. 231 South Front St.,

PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.

TRADE MARK.

MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil,

AND PAINTERS' COLORS.

Brooklyn White Lead Co.

TRADE MARK

White Lead, Red Lead & Litharge.

No. 182 Front Street,

NEW YORK,

JOHN JEWETT & SONS,

Manufacturers of the well-known brand of

WHITE LEAD.

JEWETT & SONS, PERFECTLY PURE WHITE LEAD.

TRADE MARK

ALSO MANUFACTURERS OF

LINSEED OIL.

181 Front Street, NEW YORK.

ATLANTIC WHITE LEAD WARRANTED PURE ROBERT COLGATE & Co. TRADE MARK

The Atlantic White Lead and Linseed Oil Co.,

Manufacturers of

White Lead (Atlantic), Red Lead, Litharge, Glass Makers' Litharge and Orange Mineral;

LINSEED OIL,

Raw, Refined and Boiled.

ROBERT COLGATE & CO.,

287 Pearl St., NEW YORK.

SALEM LEAD COMPANY,

CORRODERS AND MANUFACTURERS OF

PURE WHITE LEAD.

SALEM LEAD CO. 100 WARRANTED PURE SALEM, MASS.

ALSO MANUFACTURERS OF

Lead Pipe and Narrow Sheet Lead.

F. A. BROWN, Treas. SALEM, MASS.

LEVER

Lemon Squeezer,

With perforated strainer. It will squeeze one-third more juice from a lemon than any other, also quicker.

R. Onderdonk.

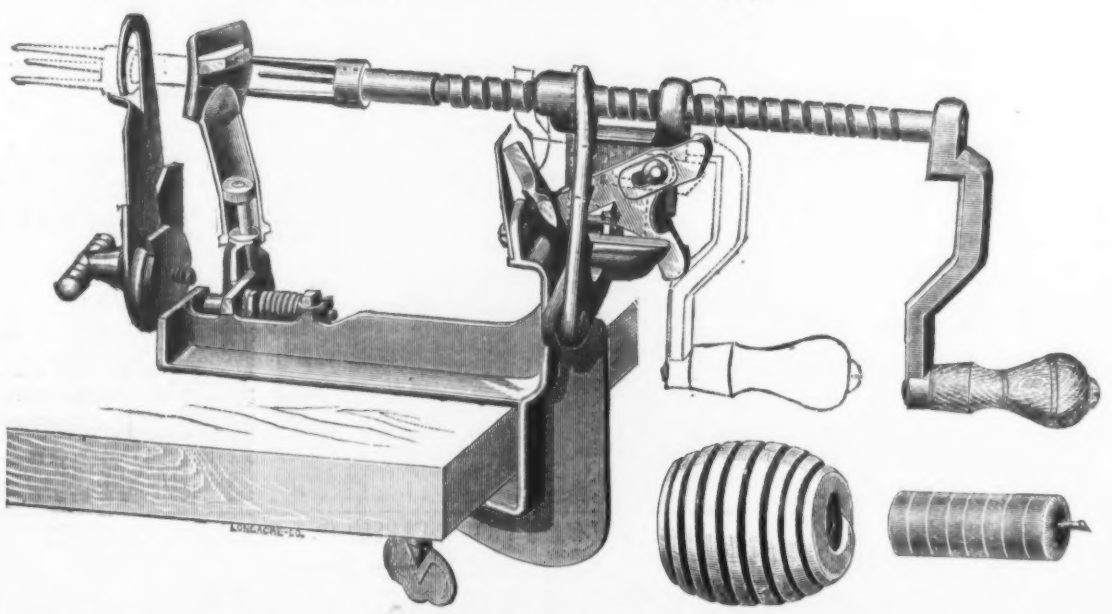
ADVANCE

APPLE PARER, CORER, AND SLICER

OF 1882.

Patented October 19, 1875, and Patents Pending.

The Only Machine ever Invented that will Entirely Pare, Core, and Slice an Apple.



With *one hand* you can Pare, Core and Slice an Apple and withdraw the Fork from the Core.

MANUFACTURED BY THE

READING HARDWARE CO., READING, PA.

U. S Coast and Geodetic Survey Office,
Washington, June 12th, 1882.

MESSRS. RIEHLÉ BROTHERS, Philadelphia:

Dear Sirs.—In reply to your letter of the 8th inst. asking me for an expression of my opinion in regard to the merits of the Weighing and Testing Machines constructed by you, I must mainly refer you to my findings as one of the Judges at the Centennial Commission, on which occasion I made a careful comparative examination of the manufactures of different firms. You will find in the published volume of Reports and Awards, Group XXV, Page 8, the following special commendation:

"A comparatively modern form among Weighing Machines is the Railway Platform Scale, of which the conditions are that it shall always be ready for action, and admit of loads as great as forty tons being rolled upon it without injury to its suspension. The construction of these Machines is most developed in the United States, and the plan of Riehlé Brothers, of Philadelphia, has appeared to the Judges to offer the greatest guarantee of accuracy and durability."

Also on Page 153 you will find the following award:

"RIEHLÉ BROTHERS, Philadelphia, Pa., U. S.
WEIGHING AND TESTING MACHINES.
Commended for the manufacture of Railway Track Scales, and Testing Machines for ascertaining the strength of materials; of superior design and construction, combining true mechanical principles with great judgment and ingenuity in the disposition of parts."

Since the foregoing opinions were written, I have had occasion to know that you have made many improvements in details of construction, and that you maintain your position in the foremost rank of *constructors of Weighing and Testing Machines.*

Yours respectfully,
J. E. HILGARD,
(Copy.) Superintendent.

GUN POWDER.

Laflin & Rand Powder Co,

No. 29 Murray Street, New York,

Manufacture and sell the following celebrated brands of Sporting Powder known everywhere as

ORANGE LIGHTNING,
ORANGE DUCKING,
ORANGE RIFLE

more popular than any Powder now in use.

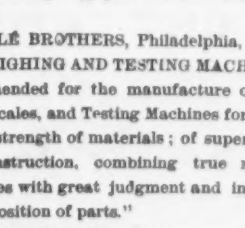
Blasting Powder and Electrical Blasting Apparatus.

Military Powder on hand and made to order.

SAFETY FUSE, FRICTIONAL & PLATINUM FUSES.

Pamphlets showing sizes of grain sent free.

SECURITY KEY RING.



The best Key Ring in the market. Manufactured from the best steel and warranted not to break.

EVERY RING GUARANTEED.

Manufactured exclusively by

JOHN W. JOCHIM, Ishpeming, Mich.

Orders from the trade solicited. Prices furnished on application. Samples furnished free by mail for 15 cts.

The "Eureka" Pipe Cutter

THE BODY—is fitted with an adjustable Cast-Steel Jaw at the point where it comes in contact with the Pipe, which Jaw can be renewed at any time by simply removing one screw. By this system the wearing away of the Jaw (which in other cutters is the first part to give out) is effectually prevented, and this tool can be kept in first-class order at all times.

THE WHEEL BLOCK.—This is also of Steel, neatly fitted to its socket and cannot be dropped out. It is much more durable than the cast-iron blocks and is hardened at the point where the rod comes in contact with it.

THE HANDLE—of this Cutter is put on to stay, and cannot be removed by the roughest usage, as it is an iron handle, cast fast to the Rod, operating the block.

——MANUFACTURED BY——

Pancoast and Maule 243 & 245 SOUTH THIRD STREET PHILADA.

GREATEST ROCK BREAKER ON EARTH.

CAPACITY { A TON A MINUTE. DON'T FORGET IT.

Guaranteed to do Double the Work of any other or Money Refunded.

SEND FOR CIRCULARS.

ALSO,

Engines, Boilers, Stamp Mills and Mining Machinery.

GATES & SCOVILLE IRON WORKS.

52 Canal St., Chicago.

PATENT PLAIN BACK SOLID CAST STEEL

SHOVELS & SPADES

OF UNRIVALED QUALITY AND FINISH.

Sample Orders and Correspondence Solicited.

PAYNE PETTEBONE & SON,

Works and Main Office, - - - - WYOMING, Luzerne Co., PA

GLOBE MFG. CO., Middletown, Conn.,

Manufacturers of

THE FAVORITE POCKET WRENCHES

Made both of best Malleable Iron and Cast Steel tempered in Oil. Two sizes, 4 and 5½ inch. Also manufacturers of the "Baldwin" Plane Irons and a full line of Socket Firmer and Framing Chisels, Socket Gouges Cleavers, Draw Knives, &c. Catalogue and discounts to the trade.

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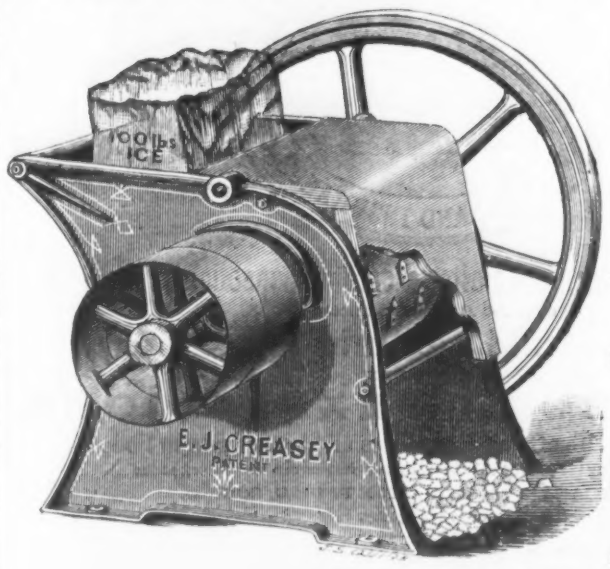


IN USE BY

Meat & Fish Packers,
ICE CREAM MAKERS,
HOTELS,
CONFECTIONERS.

Five Sizes, from $5 to $100.

Send for Circular to

J. S. L. WHARTON
15th & Wood Sts.,
Philadelphia, Pa.

WILMINGTON, DEL., April 17th, 1882.

GENTLEMEN:—In regard to yours of March 29th, would say that in addition to the one bought of ou in 1880 to run by hand, we bought one in 1881 to run by steam, and run through it 17 *tons* in less an *two hours* (No. A). We are now using both in different places, and like them very much. They re a much better machine for the purpose than any I have yet seen. Yours, truly,

JACOB PUSEY, Prest., Kennebec Ice and Coal Co.

SAVES ICE, TIME, MONEY.

SCOTT MANUFACTURING CO.,

BALTIMORE, MD.,

SOLE PATENTEES AND MANUFACTURERS.

ROTARY KNIFE.

PEACH PARER.

The drawing cut of the revolving knife is the only known principle for a machine to pare peaches successfully. The Machine has little in common with ordinary parers.

THE

ONLY PEACH PARER.

THE

BEST APPLE PARER.

GOLD MEDAL.

APPLE PARER.

Enlarged and improved. Is the only successful Parer with a quick return movement of the knife. All the wheels have square holes and shafts with square ends, so they can not work loose.

UNIVERSAL CAN OPENER.

SOLID CAST-STEEL SHANK AND KNIFE.

Adjustable to cans of any shape and size. Also,

Patent Pea Assorting Machines
Patent Peach Pitting Machines } For Packers Use

Also Manufacturers of **Medallion and Victoria Egg Beaters.**

MORE RAIN---MORE ROOT.

It has been too wet to call and see you, but we remind you that the continued "spell of weather" has increased the sale of **Hill's Triangular Hog Rings** *over 27 per cent.*

DAMP.

Dec.	1881.....	418,650
Jan.	1882.....	2,224,375
Feb.	"	1,843,250
Mar.	"	3,216,700
April	"	1,491,100
May	"	1,406,400
TOTAL.....		10,600,475

DRY.

Dec.	1880.....	142,050
Jan.	1881.....	1,676,700
Feb.	"	1,353,020
Mar.	"	1 812,700
April	"	1,951,700
May	"	1,378,120
TOTAL.....		8,321,290

GAIN, - - - 2,279,185 RINGS

Vennor prophesies a "saft" summer, enabling Hogs to Root unless prevented by the use of Hill's Triangular Hog Rings. All orders promptly filled on day of receipt at our GUARANTEED prices.

H. W. HILL & CO.,

H. W. HILL. } DECATUR, ILL.
C. P. HOUSUM. }

JOHN SOMMER'S SON. 8, 10 & 12 Pearl Street, NEWARK, N. J.,

Manufacturer of every description

WOODEN FAUCETS,

Mallets and Variety Wood Turning.

All first quality faucets must be labeled.

JOHN SOMMER'S BEST METALLIC KEY.

Cork Lined, first quality, warranted. Metallic Key, Lignumvitæ Key, Rosewood, Red Cedar, Cherry and Butternut Faucets.

John Sommer's Metallic Key and First Quality Cork-lined Faucets are the best.

Send for catalogue.

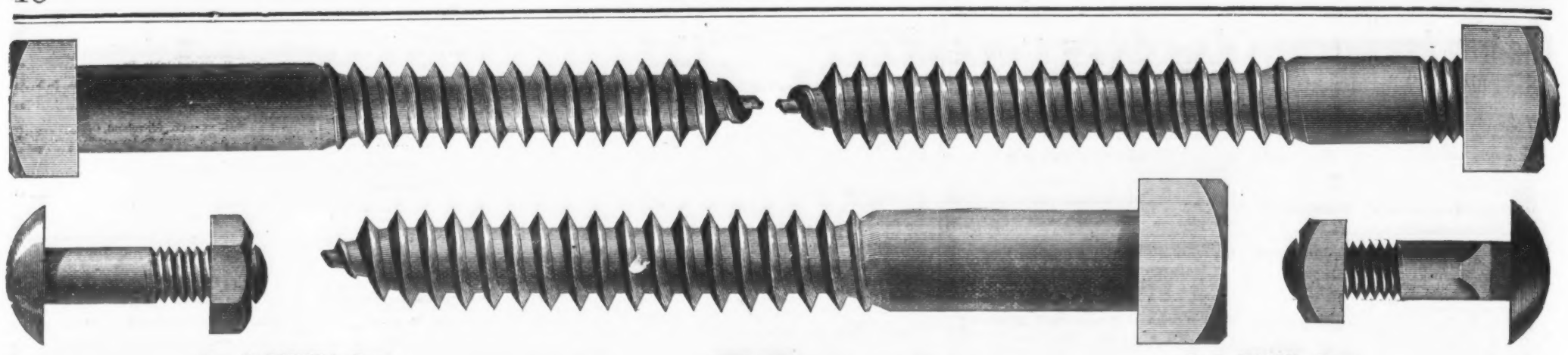
HEMACITE

ADDRESS
DIBBLE MFG. COMPANY,
TRENTON, N. J.

REGISTERED **HEMACITE** { DOOR KNOBS, DRAWER KNOBS, SHUTTER KNOBS, HOUSE TRIMMINGS.

The Iron Age Directory

and Index to Advertisements.

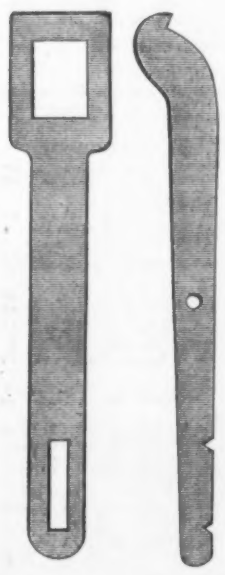


Wm. H. HASKELL, Prest.

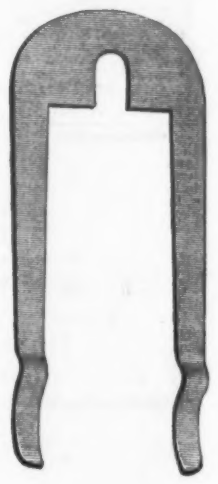
E. S. MASON, Treas.

Wm. H. Haskell Co.,

MANUFACTURERS OF



BOLTS AND COACH SCREWS,

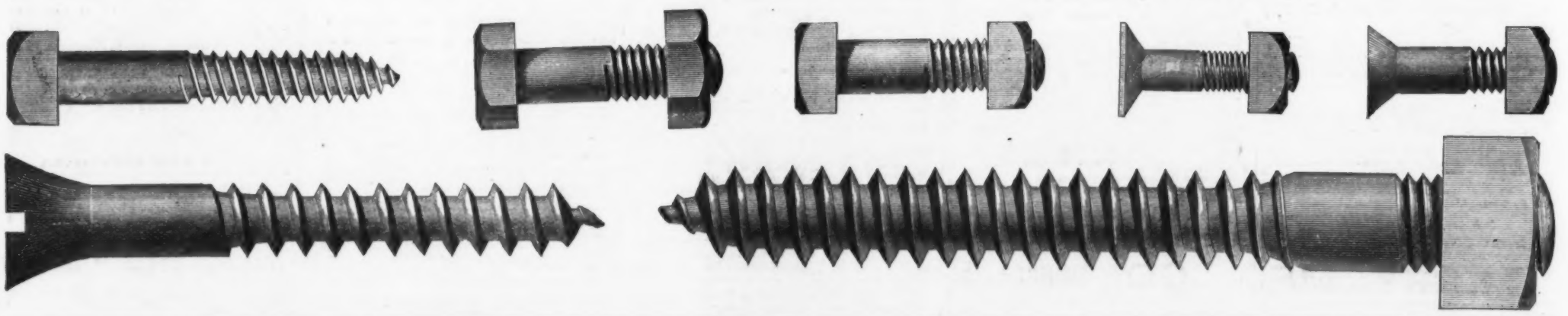


277 Main Street, Pawtucket, R. I.

Send for Catalogue.

HENRY B. NEWHALL, 105 Chambers St., New York Agent.

JAMES H. WORK, 13 Pearl St., Boston Agent.



A. F. PIKE, Pike Station, Crafton Co., N. H., U. S. A.

The World's Headquarters for Pike's Celebrated Blue Stone for Scythes and all Edge Tools.

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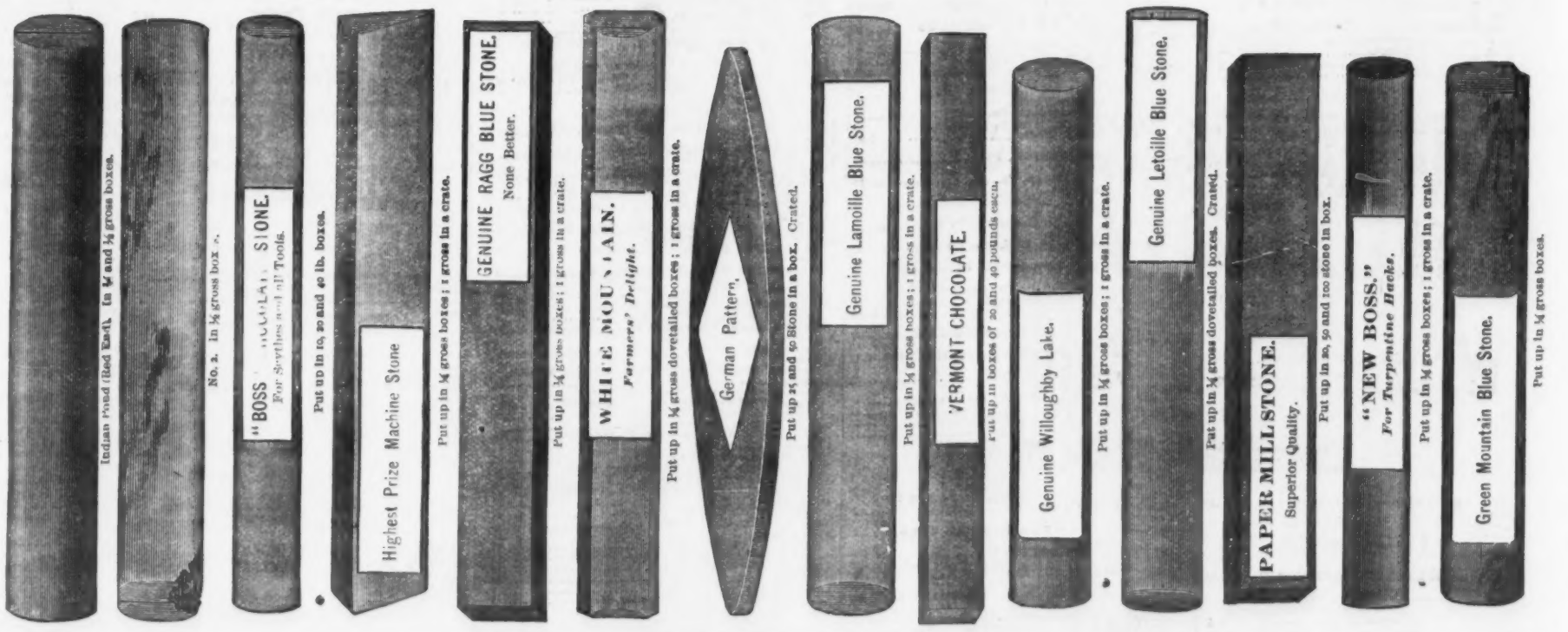
Old,
Reliable,
Indian Pond,
(Red End),
Premium,
Union,
White Mountain,
Letoile,
Diamond Grit,
Fisherman (Rough),
Boss Hacker (Oval),
Lamoille,
Willoughby Lake,
Green Mountain,
Black Diamond,
Ragg (9 and 10 inch),
Mowing Machine,
Paper Mill Stone,
Vermont Darby,
Chocolate,
Axbitts,

WRITE ME FOR PRICES.



W. CULBERTSON, President. WM. NEHRING, Superintendent. A. PLUEMER, Sec'y, Treas. and Gen'l Manager

QUEEN CITY MALLEABLE IRON CO.

Make all Shapes and Sizes of

Malleable Iron Castings

known to the trade. Our specialty is

WELDING MALLEABLE CASTINGS.

Guaranteed to weld perfectly and capable of being drawn under a hammer. Address,

N. W. Corner Vine and Second Streets,

CINCINNATI.

20,000 Sold the Second Year.

THE BEST ADJUSTABLE BAG HOLDER

In the World. PRICE ONLY $1.50.

Sent free, on receipt of the price, anywhere in the United States.

Just the thing for the Farmer, Thresher, Miller, the Feed Store Grain, Potato, Guano and Phosphate dealers, Postmasters and Publishers, and to all others who use Sacks or Bags it is indispensable. A perfect and simple device, made of iron, and will last a life time. Sold by the Hardware trade everywhere. Orders solicited. The platform is extra if wanted. Agents wanted everywhere. Address

L. JEFF. SPRENGLE,
Sole Manufacturer,
Ashland, Ohio.

None can do without it for $1.50. Send for a circular. Special discount to the trade.

Will furnish a sample dozen to the trade during the month of January at the low price of $9.

Established 1855. KEYSTONE WORKS. *Centennial Award 1876.*

GEORGE GRIFFITHS,

MANUFACTURER OF

Shovels, Spades, Scoops, Coal Hods, &c.,

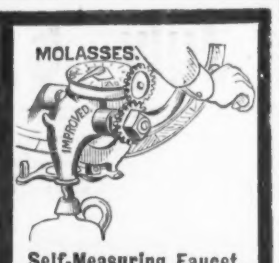
Nos. 511, 513 and 515 LOCUST ST.,

PHILADELPHIA, PA., U. S. A.

Send for Price List.

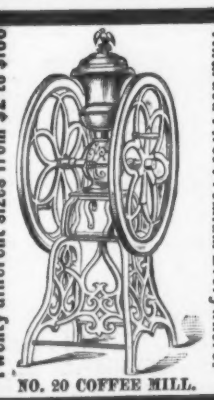

Fruit, Wine & Jelly Press.


SAUSAGE STUFFER.



Self-Measuring Faucet.

ENTERPRISE MANUFACTURING CO. OF PA.,
THIRD & DAUPHIN STS, PHILADELPHIA, PA.



NO. 20 COFFEE MILL.

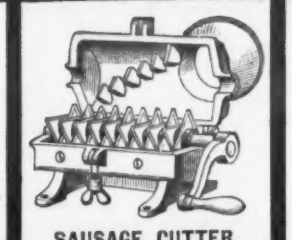

MRS. POTTS'
Cold Handle Double Pointed Sad Irons.

Tincture Presses,
Self-Weighing
Cheese Knife,
Cork Presses.

THE BEST
ARE THE
CHEAPEST.

SOLD BY HARDWARE DEALERS.
SEND FOR ILLUSTRATED CATALOGUE, FREE.


Smoked Beef Shaver.

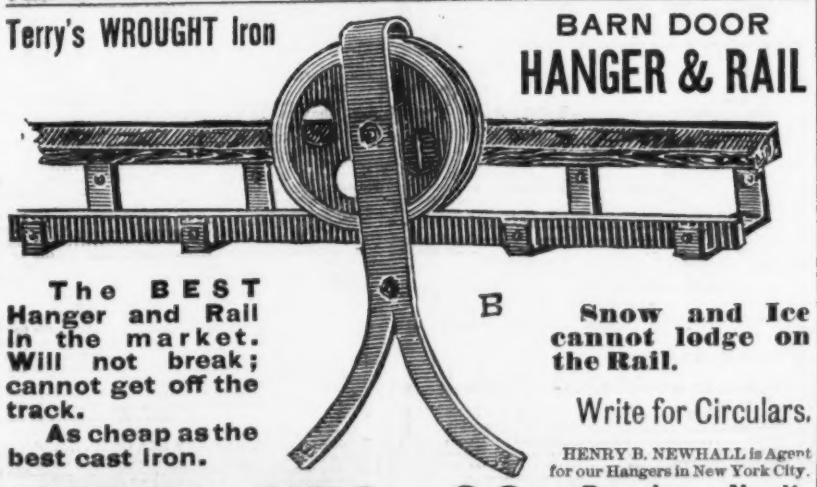

SAUSAGE CUTTER.


Bung Hole Borer.

Tobacco & Root Cutter.

Terry's WROUGHT Iron

BARN DOOR
HANGER & RAIL



The BEST Hanger and Rail in the market. Will not break; cannot get off the track.

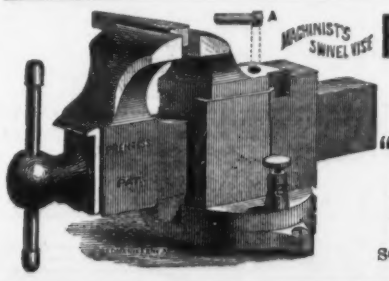
As cheap as the best cast iron.

Snow and Ice cannot lodge on the Rail.

Write for Circulars.

HENRY B. NEWHALL is Agent for our Hangers in New York City.

TERRY MFG. CO., Dundee, N. Y.



PRENTISS' PAT. VISES,
Adjustable Jaw.
Stationary or Pat. Swivel Bottoms.
ADAPTED TO ALL KINDS OF VISE WORK. ALSO
"PEERLESS" SWIVEL PIPE GRIP,
FITS ANY VISE. SOLD BY THE TRADE.
PRENTISS VISE CO.,
23 Dey Street, New York.
SOLE PROPRIETORS. SEND FOR CIRCULAR

THE CLARK M'F'G CO. MANUFACTURERS OF BUILDERS' HARDWARE BUFFALO, N.Y.

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers St., New York.

RHODE ISLAND HORSE SHOE CO.,

MANUFACTURERS OF

Horse, Mule & Snow Shoes of the Perkins Pattern

Works at Valley Falls, R. I. Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, President C. H. PERKINS, Gen'l Manager. R. W COMSTOCK, Secretary

Bemis & Call Hardware & Tool Co.

This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench thus making a combination which has no equal.

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

THE

Morgan Variable Blast

WATER TUYERE IRON

With the front plate removed, showing the rotating air tubes, through which four different currents of air may be passed, thereby making any sized fire, from two to eighteen inches in diameter.

It actually SAVES ONE HALF of the coal, makes an intense heat just where 'tis needed, and burns NO coal unnecessarily; always gives a center blast, and cleans all the dirt from the fire; supplies hot water.

We also furnish a Tuyere on same principle without water attachment. All goods guaranteed to please or no sale. Catalogue sent free. Special inducements to the trade. Address

A. W. MORGAN & CO.,
52 VANCE BLOCK, INDIANAPOLIS, IND.

INDIANAPOLIS, July 11, 1881.

MESSRS. A. W. MORGAN & Co.

Gentlemen: I have tested your Variable Blast Tuyere Iron, and pronounce it a perfect success. It does all you claim for it. Makes a large or small fire at will; gives a center blast; saves time, labor and coal, and it heats much more rapidly.

AUGUST ALTON.

NIRVANA, MICH., Oct. 10, 1881.

A. W. MORGAN & Co.

Dear Sirs: I have tested your Variable Blast Tuyere Iron perfectly. I can take a larger heat with less coal and labor than any other iron I ever saw. It is second to none. I have welded a four-inch bar with the smallest blast for a test.

Yours truly, DANIEL MERV.

LEXINGTON, MICH., Oct. 16, 1881.

A. W. MORGAN & Co.

We are well pleased with our Tuyere Iron. It gives the best satisfaction, and is a great saving in coal.

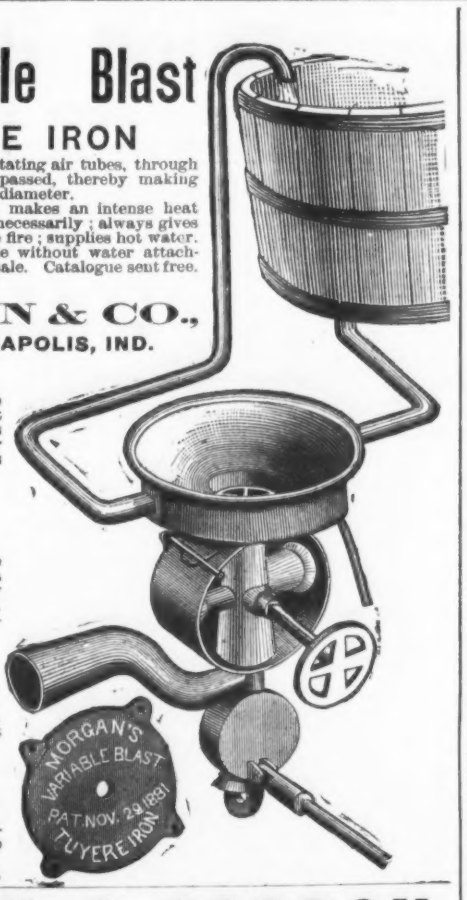
W. J. BAKER & CO.

INDIANAPOLIS, IND., April 28, 1882.

MESSRS. A. W. MORGAN & Co.

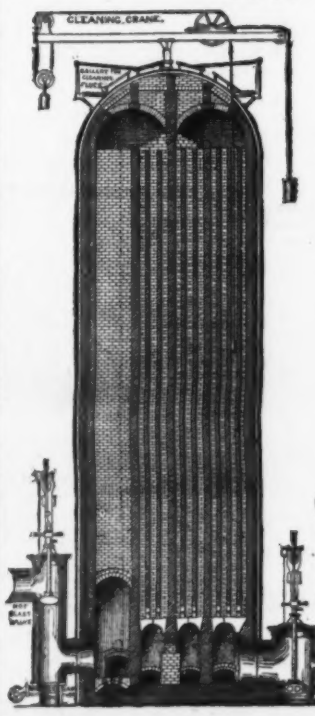
Dear Sirs: We take great pleasure in recommending your Tuyere. We believe it the very best made. Yours,

INDIANAPOLIS MACHINE & BOLT W'KS.



WITHEROW & GORDON,

ENGINEERS.

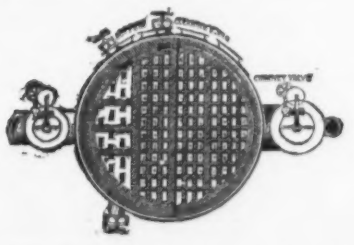


Whitwell Fire-Brick

HOT-BLAST STOVES

Contract for erecting the same. Also, for Building and Replacing all types of Blast Furnaces. Combining Economy with Efficiency and Modern Improvements, wherein the output of Furnaces is increased fully 50 per cent. and the fuel consumption decreased in the same ratio.

Our Blast Engines, Hoisting Engines, &c., have no superior in strength of parts, duty or economy. We solicit an opportunity to make proposals on Blast Furnaces, Rolling Mill or Steel Works Machinery.



Main Office, 86 Water St., Pittsburgh, Pa.

WORKS, NEW CASTLE PA.

JOHN S. FRAY,

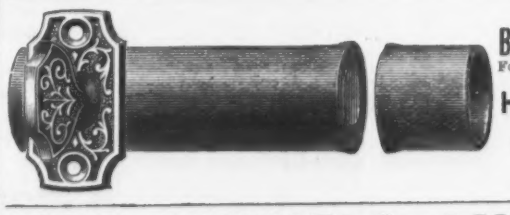
Successor to FRAY & PIGG, Bridgeport, Ct.


Spofford Bit Brace.


Spofford Sleeve Brace.

The Spofford Bit Brace is made under Letters Patent of the U. S. A., granted to N. Spofford, March 23, 1880 assigned to Fray & Pigg, and now held by John S. Fray, Mr. Pigg having retired from the firm.

All Iron, Five Sizes.		Cocobolo Head and Handle.		Sleeve Brace.	
No. 7	7 inch sweep.	No. 107	7 inch sweep.	No. 70	7 inch sweep.
No. 8	8 "	No. 108	8 "	No. 80	8 "
No. 10	10 "	No. 110	10 "	No. 100	10 "
No. 12	12 "	No. 112	12 "	No. 120	12 "
No. 14	14				



IVES' PATENT
Burglar-Proof Door Bolts.
For sale by leading Hardware Jobber throughout the country.
HOBART B. IVES,
Sole Manufacturer and Patentee,
187 St. John Street,
NEW HAVEN, CONN., U. S. A.
Send for Illustrated Price List.

FIRE SHOVELS AND POKERS.

WHEELING HINGE CO.,

WHEELING, W. VA.

CHAMPION
HOG RINGER
RINGS and HOLDER.
Only double Ring ever invented. The only Ring that will effectually keep Hogs from rooting. No sharp points in the nose.

CORN HUSKER
is the best Husker in the market. Farmers say it is the best. Use no other.

BROWN'S
HOG AND PIG
RINGER and RINGS.
Only single Ring in the market that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers 75c. Rings, 40c. 10c. Holders, 75c. Huskers, 15c.

CHAMBERS, BERING & QUINLAN, Exclusive Manufacturers, Decatur, Ill.

BUTLER & COLDEY MFG. CO., Limited,
MANUFACTURERS OF
Hardware and Machinist Tools,
Factory, ARLINGTON, N. J. P. O. Box 1909. Office, 97 Chambers St., NEW YORK

PERFECTION
WINDOW CLEANERS

Perfection Window Cleaners can be procured in any quantity from the leading Hardware, Woodenware and Rubber Houses of this country and Europe. Among whom are the following.

EASTERN RUBBER CO., Boston, Mass.
GOODYEAR'S RUBBER MFG. CO., N. Y. City.
ROBT. C. GEDDIS, Philadelphia, Pa.
DUNCAN & THOMPSONS, Pittsburgh, Pa.
HAMILTON & MATHEWS, Rochester, N. Y
McINTOSH, GOOD & HUNTINGTON, Clevel
PECK & BEMIS, Cleveland O.
CREIGHTON & SON, Louisville, Ky.
KIPP BROS., Indianapolis, Ind.
FELIX, MARSTON & BLAIR, Chicago, I
GOULD, HALL & CO., Chicago, Ill.
P. N. EARLE & CO., Chicago, Ill.
GOODYEAR RUBBER CO., (and Br Chicago, Ill.
SIMMONS HARDWARE CO., St. Louis, M
HALL & WILLIS HDW. CO., Kansas City
GORDON HARDWARE CO., San Francise
A. F. CONANT, London, Eng.
FRED'K ORME & CO., London, Eng.
THO. BRYAN, London, Ont.

Dealers will be careful to ask for the Perfection Window Cleaner, and take no other, as all others are infringements which we shall promptly suppr s. See that all have two rubbers and bear our name and date of patents.

PERFECTION WINDOW CLEANER CO.,
232 La Salle St., CHICAGO, ILL.

ALL KINDS OF
Gray Iron Castings
FINE QUALITY AND FINISH.
JOHN KEPPLEMAN,
Cor. Second and Court Sts., Reading, Pa.

UNION BOLT AND NUT WORKS.
THOMAS PARKES,
MANUFACTURER OF
MACHINE BOLTS, NUTS AND RIVETS
Of All Kinds.
Office and Works.
204, 206 & 208 Chicago St., BUFFALO, N. Y.

Grindstones, Emery, &c.

Walter R. Wood,
GRINDSTONES.
Berea, O., Nova Scotia, & other brands.
283 and 285 Front Street, New York.

GEO. CHASE,
The largest manufacturers in the world of
OIL 

STONE
Of all description.
107th Street and Harlem River.
Send for Illustrated Price List. NEW YORK.

OHIO GRINDSTONE COMPANY,
H. H. CLOUGH, Prest. J. M. WORTHINGTON, Sec'y
JAMES NICHOLL, V. Pt. E. K. MUSSEY, Treas.
Manufacturers of
GRINDSTONES
Of All Kinds.
127 Superior Street,
CLEVELAND, OHIO.

New York Wholesale Prices, July 5, 1882.

HARDWARE.

Anvils.
Eagle Anvils, American.....₩ ℔ 10c dis 20 %
Wright's.....10½c @ 11c
Armitage's Mouse Hole.....9½c @ 9¾c
Trenton.....10½c
Wilkinson's.....10½c

Anvil Vise and Drill.
Millers Falls Co., $28.00.....dis. 20 %
Cheney Anvil and Vise.....dis 25&2 %

Augers and Bits.
Conn. Valley Mfg. Co. / Douglass Mfg. Co. / C. E. Jennings & Co. / Humphreysville Mfg. Co. / Ives / Beecher (French, Swift & Co.) / Griswold / Nobles Mfg. Co. / Snell Mfg. Co. } dis. 40&10 % from list of Jan. 7, 1880.
Watrous & Co. Extension Lip.....dis 35 %
Cook's Douglass Mfg. Co.....dis 40&10 %
Patent Solid Head.....dis 30 %
Lewis' Patent Single Twist.....dis 40 %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand Rail Bits.....dis 10&10&10 %
Russell Jennings' Augers.....dis 16⅔&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwright's Augers.....dis 25&10&10 %
Imitation Jennings' Bits.....dis 45 %
Ives' "Jennings" Bits.....dis 33⅓&10 %
Snell Mfg. Co.'s Jennings' Bits.....dis 40 %
Andrews' Bits.....dis 40 %
Expansive Bits, Clark's, small, $18; large, $26..dis 25 %
Expansive Bits, Ives.....$20 @ $30—dis 33⅓ %
Expansive Bits, Blake's.....$20—dis 40 %
Expansive Bits, Parmelee's.....$20 & $30—dis 33⅓ %
Expansive Bits, Derby, $17 and $26.....dis 40 %
Hollow Augers, Ives' / Hollow Augers, French, Swift & Co. }.....dis 25 %
Hollow Augers, Douglass'.....dis 15&10 %
Hollow Augers, Bonney's Adjust. ₩ doz. $48—dis 25&10 %
Hollow Augers, Stearns' Adjust. ₩ doz. $48—dis 20&10 %
Hollow Augers, Ives' Expansive, each $4.50—dis 30&10 %
Hollow Augers, Universal Expan., each $4.50—dis 20 %
Wood's.....dis 25 %
Gimlet Bits.....$7.50 ₩ gross, dis 50 %
Gimlet Bits, Diamond.....₩ doz. $1.10, dis 25&10 %
Gimlet Bits, "Bee".....dis 25 %
Double Cut Gimlet Bits, Shepardson's.....dis 40 %
Double Cut Gimlet Bits, Ct. Valley Mfg. Co..dis 30&10 %
Double Cut Gimlet Bits, Hartwell's.....dis 60&10 %
Double Cut Gimlet Bits, Douglass'.....dis 40 %
Double Cut Gimlet Bits, Ives'.....dis 50 %
Morse's Bit Stock Drill.....dis 25 %
L'Hommedieu's Ship Augers.....dis 15 %

Awl Hafts.
Sewing, Brass Ferrule.....$3.50 ₩ gross—dis 40&10 %
Patent Sewing, Short.....$1.00 ₩ doz—dis 40&10 %
Patent Sewing, Long.....$1.20 ₩ doz—net
Patent Peg, Plain Top.....$10.00 ₩ gross—dis 40&10 %
Patent Peg, Leather Top.....$12.00 ₩ gross—dis 40&10 %

Awls, Brad Sets, &c.
Awls, Sewing, Common.....₩ gross $1.70—dis 25&10 %
Awls, Shouldered Peg.....₩ gross $2.45—dis 25&10 %
Awls, Patent Peg.....₩ gross 63c—dis 25&10 %
Awls, Shouldered Brad.....₩ gross $2.70—dis 25&10 %
Awls, Handled Brad.....$7.00 ₩ gross—dis 25&10 %
Awls, Handled Scratch.....$7.00 ₩ gross—dis 25&10 %
Awls, Socket Scratch.....$1.00 @ $1.25 ₩ doz—net
Brad Sets, Aiken's.....₩ doz $12.00—dis 45&10 %
Brad Sets No. 42, $10.50; No. 43, $12.50.....dis 70&10 %
Brad Sets, Stanley's Excelsior, No. 1, $9.60...dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 2, $4.80...dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 3, $7.80...dis 30&10 %

Axes.
Single Bit, 4½ to 5½ and under.....₩ doz $9.00 net
Single Bit, 4½ to 6 and over.....₩ doz $9.50 net
Single Bit, beveled.....50c ₩ doz advance
Double Bit, 4½ to 5½ and under.....₩ doz $19 00 net
Double Bit, 4½ to 6 and over.....₩ doz $20.00 net
Double Bit, beveled.....$1.00 ₩ doz advance

Axle Grease.
Frazer's.....₩ ℔ 6c

Axles.
Standard list.....dis 45 %

Bag Holders.
Sprengle's Patent, per doz $18.....dis 40 %

Balances.
11 Spring Balances.....dis 15&10 %

Bells.
Hand, Light Brass.....dis 60&10 %
Hand, Extra Heavy.....dis 45 %
Hand, White Metal.....dis 60 %
Hand, Silver Chime.....dis 20&10 %
Hand, Globe (Cone's Patent).....dis 25&10 %
Gong, Abbe's.....dis 20&10 %
Gong, Yankee.....dis 30&10 %
Gong, Barton's.....dis 30&10 %
Crank, Taylor's.....dis 25&10 %
Crank, Brooks'.....dis 50&10&2 %
Crank, Cone's.....dis 10 %
Crank, Connel's.....dis 10 %
Lever, Sargent's.....dis 55&10 %
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....dis 25&10 %
Lever, R. & E. M. Co.'s.....dis 45&10&2 %
Lever, Reading.....dis 25&10&10 %
Pull, Brooks'.....dis 50&10&2 %
Pull, Western.....dis 25&10 %
Call.....dis 25 %
Cow, Common Wrought.....dis 55&10 %
Cow, Western.....dis 20&10 %
Cow, Western, Sargent's new list.....dis 55&10 %
Cow, Kentucky "Star".....dis 20&10 %
Cow, Kentucky, Sargent's new list.....dis 55&10 %
Cow, Dodge's Genuine Kentucky, new list—

Nos.	0	1	1½	2	3	4	5	6	Hog	
	$12.00	10.00	9.00	8.00	00	5.00	3.50	2.50	5.00	dis 50 %

Cow, Texas "Star".....dis 40 %

Bellows.
Blacksmiths', Common.....dis 45 %
Blacksmiths', Extra Pittsburgh Pattern.....dis 20 %
Molders'.....dis 25 %
Hand Bellows.....dis 25 %

Belting, Rubber.
. Belting and Packing Co.....dis

Bit Holders.
Extension, Barber's.....₩ doz $15.00—dis 40&5 %
Extension, Ives'.....₩ doz $15.00—dis 40 %
Diagonal.....₩ doz $24.00—dis 40 %
Angular.....₩ doz $24.00—dis 40&5 %

Blind Adjusters.—Domestic..₩ doz $3.00—dis 15 %
Excelsior.....₩ doz $16.00—dis 50&10&2 %

Blind Fasteners.
Mackrell's.....₩ doz pairs. $1.00, dis 10 %
Van Sand's, Screw pattern.....$9 ₩ gro. net
Van Sand's, Old Pattern...1¼, $8; 1½, $8 50 ₩ gro. net
Washburn's Old Pattern.....$9 ₩ gro. net
Merriman's.....new list net
Salisbury & Austin, No. 2008.....$9 ₩ gro. net
Security Gravity.....$9 ₩ gro. net

Blind Staples.
Bar bed, ⅜ in. and larger.....₩ ℔ 11c net
Bar bed, ⅝ in.....₩ ℔ 13c net

Blocks.
Penfield Block Co., R. and L Strap'd..... } New List. dis 35 %
Penfield Block Co., W. L. C. bushed.....dis 35 %
Penfield Block Co., W. L. all steel roll'r.....dis 20 %
Penfield Block Co., L. & L Sheaves.....dis 35 %
Stanley Rule and Level Co.'s.....dis 40&10 %

Bolts.
Cast Iron Barrel, Shutter, &c.....dis 50&10 %
Cast Iron Chain (Sargent's list).....dis 60&10 %
Ives' Pat. Door Bolts.....dis 50
Wrought Barrel.....dis 55&10 %
Wrought Square.....dis 55&10 %
Wrought Shutter, all Iron, Stanley's list.....dis 50&10 %
Wrought Shutter, Brass Knob, Stanley's list.dis 50&10 %
Wrought Shutter, Sargent's list.....dis 55&10 %
Wrought Sunk Flush, Sargent's.....dis 65&10&10 %
Wrought Sunk Flush, Stanley's.....dis 40&10 %
Wrought B.K. Flush, Com'n. Stanley's.....dis 55&2½ %
Carriage and Tire, Common.....dis 80 %
Carriage and Tire, Philadelphia, new list.....dis 65 %
Carriage and Tire, Philadelphia Pattern.....dis 70 %
Union Carriage.....dis 70 %
R. B. & W. Carriage (old list).....dis 65 %
Tire, Am. Screw Co.'s, Phila, new list, Nov 1, '71..dis 75 %
Tire, "Bay State".....dis 80&10 %
Tire, R. B & W., new list.....dis 70&10 %
Stove—American Screw Co.'s.....dis 40 %
Stove, R. B. & W.....dis 40 %
R. & E. Mfg. Co.....dis 10 %
Plow.....dis 40 %
Plow, R. B. & W.....dis 40 %
Machine.....dis 60 %
Bolt Ends.....dis 00 %

Borax.....16c ₩ ℔ net

Boring Machines.

	Upright	Angular	
First quality, no Augers	$5.50	$6.75	dis 45 %
Phillips, with Augers	7.00	7.50	net
Jennings & Co., no Augers	5.50	6.75	dis 40 %

Boxes.
Interchangeable Shelf Boxes.....dis 20 %

Braces.
Q. S. Backus.....dis 50 %
Wilson Mfg. Co.....dis 10 %
Barber's.....dis 40&5 %
Spofford's Patent.....dis 50&5 %
Ives' Patent Braces.....dis 50&10 %
Common Ball (American).....dis 55 %
Amidon's.....dis 50 %
Barker's Imp'd.....dis 40 %
Empire.....dis 30 %
Buffalo Ball.....dis 40 %

Brackets.
Shelf, plain.....dis 50&10 %
Shelf, fancy.....dis 55&10 %
Reading.....dis 55&10 %

Bright Wire Goods list of Dec. 15, '79..dis 55&10 %

Bull Rings.
Union Nut Co.....dis 55 %
Sargent's.....dis 60&10 %
Hotchkiss', low list.....dis 15 %
Humason Beckley & Co.'s.....dis 55&5 %

Butts.
Wrought Brass.....dis 65&10 %
Cast Brass, Tiebout's.....dis 33⅓ %
Cast Brass, Corbin's Fast Joint.....dis 20&10 %
Cast Brass, Loose Joint.....dis 10&10 %
Fast Joint, Narrow.....dis 40&10 %
Fast Joint, Broad.....dis 40&10 %
Loose Joint.....dis 50&10 %
Loose Joint, Japanned.....dis 50&10 %
Loose Joint, with Acorns.....dis 40&10 %
Loose Joint, Japanned, with Acorns.....dis 50&10 %
Parliament Butts.....dis 50&10 %
Mayer's Hinges.....dis 55&10 %
Loose Pin, no Acorn.....dis 50&10 %
Loose Pin, Acorns.....dis 45&10 %
Loose Pin, Acorns, Japanned.....dis 55&10 %
Loose Pin, Acorns, Japanned, Plated Tips..dis 55&10 %

WROUGHT IRON.

Fast Joint, Narrow.....dis 40&10 %
Fast Joint, Lt. Narrow.....dis 40&10 %
Fast Joint, Broad.....dis 40&10 %
Loose Joint, Broad.....dis 45&10 %
Table Butts, Back Flaps, &c.....dis 40&10 %
Inside Blind, Regular.....dis 40&10 %
Inside Blind, Light.....dis 40&10 %
Loose Pin, Wrt.....dis 45&10 %
Loose Pin, Light.....dis 40&10 %
Spring Hinges:
Geer's Spring and Blank Butts.....dis 25 %
Sabin Mfg. Co.'s Double Acting.....dis 35 %
Union Spiral Spring, Japanned.....dis 25 %
Union Spiral Spring, Ornamental.....dis 20 %
Union Spring Hinge Co.'s.....dis 25 %
American Spring Hinge Co.'s.....dis 25 %
Gem Spring Hinges.....dis 25 %
Union Mfg. Co.....dis 25 %
Bommer's.....dis 25 %
Buckman's.....dis 25 %
Blind Butts, Parker.....dis 70&2 %
Blind Butts, Palmer.....dis 45&10 %
Blind Butts, Seymour.....dis 70&2 %
Blind Butts, Shepard's "Double Locking," Nos. 1 & 2.....dis 70&2 %
Blind Butts, Shepard's "Noiseless, Nos. 50 & 60.....dis 70&2 %
Blind Butts, Lull & Porter.....dis 66⅔&10 %
Blind Butts, Nicholson.....dis 45&10 %
Blind Butts, Huffer.....dis 50 %
Blind Butts, Clark's, Nos. 1, 3, 5, 40, 45 and 50 dis 70&2 %
Blind Butts, Sargent's, No. 1, 3.....dis 66⅔&2&10 %
Blind Butts, Sargent's, No. 12.....dis 70&10 %
Blind Butts, Reading's Gravity.....dis 66⅔&10 %
Clark's Improved Shutter Hinge, Nos. 0, 1, 1½, 2, 2½, 3.....dis 60&10 %

Bow Pins.
Humason, Beckley & Co.'s.....dis 55&5 %
Sargent & Co.'s.....$19.70 and $21.40, dis 60&10 %

Butcher's Cleavers.
Humason & Beckley Mfg. Co.....dis 25 %
Bradley's.....dis 25 %
Beatty's.....dis 5&5

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Can Openers.
Messenger's Comet.....₩ doz, $3.00, dis 25
American.....₩ gross $7.50, dis 10 %
Duplex.....₩ doz 24c, dis 15@20 %
Lyman's.....₩ doz $3.75, dis 20 %
No. 4, French.....₩ doz $2.25, dis 55 %
No. 5, Iron Handle.....₩ gross $7.50, dis 10 %
Eureka.....₩ doz $2.50, dis 10 %
Sardine Scissors.....₩ doz $7.00, dis 55 %
Star.....₩ doz $5 00, dis 25 %
Sprague, No. 1, $1.00; No. 2, $2.25; No. 3, $2.50.....dis 50&10 %
"Worlds Best" ₩ gross, No. 1. $12; No. 2, $24; No. 3, $36.....dis 50 %
Universal.....₩ doz $6.00, dis 35 %
Domestic.....₩ doz $2.50, dis 45 %

Caps—Percussion, ₩ 1000.
Hicks & Goldmark's
F. L. Waterproof, 1-10's.....50c
E. B. Trimmed Edge, 1-10's.....65c
E. B. Ground Tr'md Edge, Central Fire, 1-10's..70c
Pistol Waterproof, extra heavy, 1-10's.....$1 40
Musket Caps, 1-10's.....80c } dis 10&10
U. M. C., F. C. trimmed.....50c
U. M. C., F. L. ground.....70c } dis 10&10 %
U. M. C., Cen. fire ground.....70c
U. M. C., Double W. Proof.....$1.40 } dis 10&5 %
G. D. & S. B.....33c, dis 10 %
Double Waterproof, in 1-10's.....$1.40
Colt's Pistol, in 1-10's.....70c } dis 10 %
F. L.....50c
E. B. 1-10, trimmed.....65c
E. B. 1-10, ground edge.....70c } dis 10&5 %
Musket, in 1-10's.....80c, dis 10&10 %

Cartridges.—Rim.....dis 70&10 %
Central Fire.....dis 20&10 %

Cards.—Horse and Curry..new list, July '81, dis 10 %
Cotton.....new list, July, '81, dis 10 %
Wool.....new list, July, '81, dis 10 %

Carpet Stretchers.
Cast Steel, Polished.....₩ doz $5.00, dis 30 %
Cast Iron, Steel Points.....₩ doz $2.00, dis 40 %
Bullard's.....dis 25 %

Casters.
Bed.....dis 35&10 %
Plate and Shallow Socket.....dis 35&10 %
Deep Socket.....dis 25&10 %
Martin's Patent (Phoenix).....dis 25 %

Cattle Leaders.
Humason, Beckley & Co.'s.....dis 60&10 %
Sargent's.....dis 60&10 %

Chain.
Trace, 6½-10-2.....₩ pair 79c
Trace, 6½-10-3.....₩ pair 70c } dis 35 %
Trace, 7-10-2.....₩ pair 86c
German Halter Chain, list of Dec. 31, 1881...dis 35&10 %
German Coil, list of Dec. 31, 1881.....dis 35&10 %
Covert Halter, Hitching and Breast.....dis 25&5 %
Oneida Halter Chain (old list).....dis 40 %
Galvanized Pump Chain.....₩ ℔ 9½c net
Jack Chain, Iron.....dis 60&10 %
Jack Chain, Brass.....dis 50&10 %

Chalk.
White.....₩ gross 60c net
Red.....₩ gross 80c net
Blue.....₩ gross $1.00 net
White Crayons.....₩ gross 90c net

Chisels.
Socket Framing, Crossman.....dis 65&5 %
Socket Framing, Arlington Edge Tool Co.....dis 55&10 %
Socket Framing, Buck Bros.....1876 list, dis 22½ %
Socket Framing, Merrill.....dis 65&10 %
Socket Framing, Witherby Tool Co.....dis 65&10 %
Socket Framing, Douglass'.....dis 65&10 %
Socket Firmers, Crossman.....dis 65&5 %
Socket Firmers, Arlington Edge Tool Co.....dis 65&10 %
Socket Firmers, Buck Bros.....1876 list, dis 22½ %
Socket Firmers, Merrill.....dis 65&10 %
Socket Firmers, Witherby Tool Co.....dis 65&10 %
Socket Firmers, Douglass'.....dis 65&10 %
Socket Corner.....dis 65&10 %
Tanged Firmers.....dis 40@45 %
Tanged Firmers, Butcher's.....$5.00@$5.25 to £
Tanged Firmers, Spear & Jackson's.....5.00 to £
Tanged Firmers, Buck Bros (Shank).....5.25 to £

Clamps.
Iron, Providence Tool Co.'s Wrt. Iron.....dis 25 %
Iron, Adjustable, Gray's.....dis 20 %
Iron, Adjustable, Lambert's.....dis 20 %
Iron, Adjustable, Snow's.....dis 40&5 %
Iron, Adjustable, Hammer's.....dis 15 %
Iron, Adjustable, Stearns'.....dis 20&10 %
Iron, Cabinet, Sargent's.....dis 65&10 %
Iron, Carriage Makers', Sargent'.....dis 60&10 %

Clips, Axle.
Norway or Best.....dis 40&5 %
Superior.....dis 65&5 %

Coal Hods.
Griffiths'.....dis 33⅓ %

Cockeyes.....dis 55 %

Cocks, Brass.
Racking, new list, July 10, 1880.....dis 40 %
Globe, new list, July 10, 1880.....dis 40 %
Plain Bibbs, new list, July 10, 1880.....dis 40 %
Ale and Beer, new list, July 10, 1880.....dis 40 %

Coffee Mills.
Board and Box.....dis 45 %
Wilson's.....dis 45 %
Selsor's Pat.....$9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.).....dis 25 %
French Steel.....dis 25 %
The "Swift" (Lane Bros.).....dis 25 %
Webb's Patent.....dis 45&50 %

Combined Dinner Pail and Lantern.
Per doz. $15.00.....dis 30 %

Compasses, Dividers, &c.
Compasses.....dis 55 %
Calipers.....dis 55 %
Dividers.....dis 55 %
Bemis & Call Co.'s Dividers.....dis 60&5 %
Bemis & Call Co.'s Compasses and Callipers. dis 50&5 %
Bemis & Call Co.'s Wing & inside or outside..dis 50&5 %
Bemis & Call Co.'s Double.....dis 60 %
Bemis & Call Co.'s (Call's Patent Inside).....dis 30 %
Excelsior.....dis 50 %
Miller's Patent.....dis 25 %

Coopers' Tools.
Bradley's.....dis 15 @ 20 %
Barton's.....dis 20 %

Corkscrews.—Humason & Beckly Mfg. Co.dis 33⅓ %
Clough's Wire.....dis 25 %

Corn Knives and Cutters.—Bradley's...dis 10 %
Wadsworth's.....dis 33⅓ %

Crow Bars.
Cast Steel.....₩ ℔ 8¼c
Iron, Steel Points.....₩ ℔ 6¼c

Curling Irons, &c.
⅛, ⅜, ⅝ in., $1.80, 2.00, 2.40.....dis 10 %
Curling Tongs.....₩ doz $3.65, dis 10 %
Pinching Irons.....₩ doz $7 50, dis 20 %

Curry Combs.
Fitch's, new list.....dis 50 %
Hotchkiss, Novelty, new list, July, 1880.....dis 25 %
Hotchkiss, Exclr. Supr. Champion.....dis 25 %
Lawrence "Perfect".....dis 25&10 %
Rubber.....₩ doz $10.00, dis 20&25 %

Curtain Pins.
Silvered Glass.....net
White Enamel.....net

Cutlery.
Meriden Cutlery Co. (Table).....net
Am. Miller Bro.'s Cutlery Co.....dis 25 %
Humason & Beckley, Pocket.....dis 33⅓ %
Naugatuck Cutlery Co.....list net
Aaron Burkinshaw's Pocket.....dis 25 %

Dog Collars.
Embossed Gilt.....dis 20 %
Leather.....dis 40 %
Brass.....dis 40 %
Celluloid.....dis 40 %

Door Springs.
Torrey's Rod, regular size, per doz., $3.... dis 40&10 %
Gray's Rod.....dis 15 %
Bee Rod.....dis 15 %
Warner's.....dis 15&10 %
Gem (Coil)—
No. 1, Large, Japanned.....₩ doz $4.00
No. 2, Medium, Japanned.....₩ doz 2.75 } dis 40 %
No. 3, Small, Japanned.....₩ doz 2.00
Star (Coil)—For Cop'd, Nickel-Plated, &c., see list.
No. 4 ("Shoo Fly") Screen door size, ₩ doz $1.50
No. 5, Screen Door Size.....₩ doz 2.00 } dis
No. 6, Medium.....₩ doz 2.75 } 50 %
No. 7, Large.....₩ doz 4.00
Sabin's Lever...No. 1, $1; 2, $1.50; 3, $2; 4, $2.50, dis 30 %
Sabin's Boss.......No. 1, ₩ doz. $4.00; 2, $2.75; 3, $2.00.....dis 33⅓ %
Sabin's Crown.....₩ doz $1.50, dis 33⅓ %
Philadelphia.....5 in., $5.00; 8 in., $7.75, dis 35 %
Barker's Concealed.....dis 20
Cowell's.....No. 1, $18.00; No. 2, $15.00 ₩ doz, dis 50 %
Rubber, complete.....₩ doz. $1.80, dis 10 %
Hercules.....dis 40 %

Drawing Knives.
Arlington Edge Tool Co.....dis 65&10 %
Crossman's No. 1.....dis 65&5 %
Merrill.....dis 65&10 %
Nobles Mfg. Co.....dis 15 %
Bradley's.....dis 35 %
Adjustable Handle.....dis 20 %
Witherby Tool Co.....dis 65&10 %
Douglass.....dis 65&10

Drills and Drill Stocks.
Blacksmiths'.....each, $2.50, dis 10 %
Blacksmiths' Self-Feeding.....each, $7.50, dis 20 %
Breast, P. S. & W.....dis 20&10 %
Breast, Hotchkiss'.....dis 20 %
Breast, Wilson's.....dis 20 %
Breast, Millers Falls.....each, $3.00, dis 25 %
Breast, Bartholownicw's.....each, $2.50, dis 25&10 %
Ratchet, Merrill's.....dis 10 %
Ratchet, Ingersoll's.....dis 25 %
Ratchet, Whitney's.....dis 20 %
Ratchet, Weston's.....dis 20 %
Ratchet, Moore's Triple Action.....dis 20 @ 25 %
Whitney's Hand Drill, Plain, $11.00; Adjus., $12.00.....dis 25 %
Wilson's Drill Stocks.....dis 10 %
Automatic Boring Tools.....each $2.25, dis 20 %

Drill Chucks.
Morse's Beach Patent.....dis 30 %
Morse's Adjust.....each $10.00, dis 30 %
Danbury.....$8.00, dis 30 %

Egg Beaters.
Dover.....₩ doz $2.50, dis 2 %
Monroe's.....dis 50 %
National.....₩ doz $4.50, dis 33⅓ %
Standard.....₩ gross $18, dis 25 %
Family (T. & S. Mfg. Co.).....₩ gross $18, net
Acme.....₩ gross $12, dis 25 %
Triumph (T. & S. Mfg. Co.).....₩ gross $12, net

Elevator Buckets.
Mill E. Buckets. light, 3½ to 10 in. (Duc's Improved) ₩ 100 $15.00@$54.00, dis 10 %
Mill E. Buckets, heavy, 5 to 10 in. (Duc's Improved) ₩ doz $5.00@$10.20, dis 10 %
Storehouse (Duc's Pat.), 12 to 17, $12.00 @ $[illegible], dis 10 %

Emery and Emery Paper.
Regular numbers.....₩ ℔ 6c
Flour and F. F.....₩ ℔ 4c
B. & A. Emery Paper.....dis 30&5 %
Sibley's Emery and Crocus Cloth, Large size. $16; Medium, $10.50 ₩ ream.....dis 15 %

Enameled and Tinned Ware.
Kettles.....dis 50 %
Sauce Pans.....dis 25 %
Tinned Sauce Pans.....dis 50 %

Escutcheon Pins.
Brass.....dis 50 %

Escutcheons.
Door Lock.....Same discounts as Door Locks
Brass Thread.....dis 55 %
Wood.....dis 25 %

Faucets.
Fenn's.....dis 40 %
Sohren's Pat. Rubber Ball.....dis 25 %
Fenn's Cork Stops.....dis 33⅓ %
Star.....dis 55&10 %
Vrary's Patent Petroleum.....dis 20&10 %
West's Patent Key.....dis 45 %
Metallic Key, Leather Lined.....dis 60 %
Cork Lined.....dis 70 %
J. Sommer's Best Metallic Key.....dis 40 %
J. Sommer's Cork Lined, 1st quality.....dis 50 %
Self-Measuring, Enterprise.....₩ doz., $36.00, dis 25 %
Self-Measuring, Lane's.....₩ doz., $36.00, dis 25 %
Self-Measuring, Victor.....₩ doz., $36.00, dis 25 %

Felloe Plates.....₩ ℔ 100, dis 20 %

Files.
Auburn.....$5.00 to £, dis 35 %
E. M. Boynton's.....new list, dis 35 %
J. & Riley Carr.....$4.50 to £
J. & Riley Carr Horse Rasps.....$4.75 to £
Johnson & Bro.....dis 30 %
Butcher's.....$4.50 to £
Walter Spencer & Co.'s "Diamond".....$4.50 to £
Fisher's.....$4.75 to £
Moss & Gamble.....$4.50 to £
H. Disston & Sons (new list).....dis 40 %
Heller Bros.' Horse Rasps.....dis 25 %
Nicholson.....dis 40 %
New American.....dis 40 %
Union File Co.....dis 40 %

Fluting Machines.
Knox, 4½-inch Rolls.....$3.50 each
Knox, 6-inch Rolls.....$4.00 each } dis 25 %
Eagle, 3½-inch Roll.....$2.15, dis 25 %
Eagle, 5½-inch Roll.....2.85, dis 25 %
Crown, 4½-in., $3.50; 6-in., $4.00; 8-in., $6.50 each, dis 25 %
Crown Jewel.....6-in., $3.40 each, dis 25 %
American, 5-in., $3; 6-in., $3.40; 7-in., $4.50 each, dis 25 %
Domestic Fluter.....$1.50 each, net
Geneva Hand Fluter, White Metal...₩ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00 ₩ doz.....dis 25 %
Shepard Hand Fluter, No. 85, $15 00; No. 95, $8.50; No. 110, $8.75.....dis 30 %
Clark's Hand Fluter.....₩ doz $15.00, dis 33⅓ %
Combined Fluter and Sad Iron.....₩ doz $15.00, dis 30 %
Buffalo.....₩ doz $10.00, dis 10 %

Fluting Scissors.....dis 45 %

Fly Traps.
Paragon.....₩ doz, $3, net

Forks.
Hay, Manure and Spading.....dis 50 %
Plated, A 1, Rogers & Bro.....dis 40&5&5 %
Plated, Reed & Barton.....dis 40&5&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co.....dis 25 %

Fry Pans.
Burnished list as follows.....dis 60 %

No.	0	1	2	3	4	5	6	7	8
₩ doz	$3.00	3.75	4.25	4.7	5.25	6.00	7.00	8.00	9.00

"Acme".....dis 40&10 %

Gauges.
Marking, Stanley's.....dis 50&10 %
Marking, Chapin's.....dis 55&10 %
Wire.....dis 10&10 %
Wire, Disston's.....dis 20 %
Wire, Wheeler, Madden & Co.....dis 10 %

Gimlets.
Nail and Spike.....dis 50 %
"Eureka" Gimlets.....dis 50 %
"Diamond" Gimlets.....dis 40 %
Double Cut, Shepardson's.....dis 40 %
Double Cut, Hartwell's.....dis 50 %
Double Cut, Ives'.....dis 50 %
Double Cut, Douglass'.....dis 40 %
"Bee".....₩ gro. $12 00, dis 25 %

Glue Pots.
Tinned and Enameled.....dis 25 %
Family, Howe's "Eureka".....dis 25 %
Family, L. F. & C.'s "Handy".....dis 25 %

Grindstone Fixtures.
Sargent's Patent.....dis 70&10 %
Reading Hardware Co., new list.....dis 25&10 %

Gun Wads.
U. M. C. B. E., 11 up.....$2.00
U. M. C. B. E. 9 & 10.....2.30
U. M. C. B. E. 7 & 8.....2.60
U. M. C. P. E. 11 up.....3.10
U. M. C. P. E. 9 & 10.....4.00
U. M. C. P. E., 7 & 8.....4.90 } dis 5&5 %

Halters.
Covert's Pat. Rope.....dis 50 %
Horse and Cattle Ties, Covert's.....dis 50 %

Hammers.
Maydole's.....dis 15 %
Cheney's.....dis 25 %
Hartford Hammer Co. (new list July 1, '81).....dis 20 %
Humason & Beckley.....dis 50 %
Verree.....dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.26. 1.50 and 1.75. dis 25&10 %
Nelson Tool Works.....dis 40&10 %
Warner & Noble's.....dis 5 %
Kip's.....dis 15 %
Yerkes & Plumb.....dis 15 %
Wilkinson's Smiths'.....11½c ₩ ℔ net

Hand Cuffs and Leg Irons.
Providence Tool Co., Hand Cuffs, $15.00 ₩ doz..dis 10 %
Providence Tool Co., Leg Irons, $25 00 ₩ doz.....dis 10 %
Tower's.....dis 25 %

Handles.—Door or Thumb Latches.

Nos.	0	1	2	3	4	
Per doz.	$0.80	1.00	1.18	1.35	1.50	dis 55&10 %

Roggin's Latches.....₩ doz 35c @ 40c net
Bronze Iron Drop Latches.....₩ doz $0.90 @ 1.10, dis 10 %
Jap'd Store Door Handles—Nuts, $1.35; Plate, $2.00, no Plate, $1.10.....dis 10 %
Barn Door.....₩ doz $1.60, dis 10 %
Wrought Chest.....dis 65&10 %
Surface Chest.....dis 55&10 %
Flush Chest.....dis 55&10 %
Lifting.....dis 50&10 %
Saw and Plane.....dis 40&10 %
Boynton's Patent Loop Saw Handles.....500. dis 45 %
Boynton's Patent Centennial Saw Handles.....dis 25 %
Hammer and Hatchet.....dis 20 %
Brad Awls.....₩ gross, $8.00, dis 10&10 %

Hickory Firmer Chisel, assorted. ₩ gross $4.50
Hickory Firmer Chisel, large, ₩ gross.....5.00
Apple Firmer Chisel, assorted. ₩ gross.....5.00
Apple Firmer Chisel, large, ₩ gross.....6.00
Socket Firmer Chisel, assorted, ₩ gross..3.00
Socket Framing Chisel, assorted, ₩ gross..5.00
File, assorted, ₩ gross.....2.75
Auger, assorted. ₩ gross.....5.00
Auger, large, ₩ gross.....7.00 } dis 20&10 @ 25 & 10
Patent Auger, Ives'.....dis 25 %
Patent Auger, Douglass'.....₩ set $1.25. net
Patent Auger, Swan's.....₩ set $1.00, net

Hangers.
Barn Door, old patterns.....dis 60&10 %
Barn Door, New England.....dis 60&10 %
Climax (Anti-Friction).....dis 50 %
Challenge.....dis 50 %
"Champion" Medina Mfg. Co.....$15; dis 50&10 %
Sterling Improved (Anti-Friction).....dis 65&10 %
Cheritree.....dis 50 %
Kidder's.....dis 50&5 %
U. S.....4 in., $12; 5 in., $15; dis 60 %
The "Boss".....dis 50&10 %
Terry's Patent 5 in. $12; 3½ in., $10.....dis 40 %

Harness Snaps.
Anchor (T. & S. Mfg. Co.).....dis 60 %
Henshaw's, list of 1½ changed to $14.00.....dis 55&10 %
Judd's, list of 1½ changed to $14.00.....dis 55&10 %
Fitch's (Bristol), list of 1½ change to $14.00..dis 55&10 %
Hotchkiss'.....dis 10 %
Andrews'.....dis 50 %
Sargent's.....dis 60&10 %
German.....dis 70&10 %
Covert.....dis 50 %
Covered Spring.....dis 50&10 %

Hatchets.
Isaiah Blood.....dis 25 %

	Nos.				
Shingling,	1 2 3	₩ doz	$7.25	$8.00	$8.75
Claw,	1 2 3	₩ doz	7.75	8.50	9.25
Lathing,	1 2 3	₩ doz	7.50	8.00	8.50

Hunt's.....dis 25 %

	Nos.				
Shingling,	1 2 3	₩ doz	$7.25	$8.00	$8.75
Claw,	1 2 3	₩ doz	7.75	8.50	9.25
Lathing,	1 2 3	₩ doz	7.30	8.25	9.00

Hurd's.....dis 30 %

	Nos.				
Shingling,	1 2 3	₩ doz	$8.00	$8.50	$9.00
Claw,	1 2 3	₩ doz	9.00	9.50	10.00
Lathing,	1 2 3	₩ doz	8.00	8.50	9.00

Yerkes & Plumb.....dis 25 %

	Nos.				
Shingling,	1 2 3	₩ doz	$7.50	$8.00	$8.50
Claw,	1 2 3	₩ doz	8.25	8.75	9.25
Lathing,	1 2 3	₩ doz	7.50	8.00	8.50

Simmons'.....dis 20 %

	Nos.					
Shingling,	0 1 2 3	₩ doz	$7.50	$8.00	$8.50	$9.00
Claw,	0 1 2 3	₩ doz	....	9.00	9.50	10.00
Lathing,	0 1 2 3	₩ doz	....	8.00	8.50	9.00
Broad,	1 2 3 4	₩ doz	9.00	10.00	12.00	14.00
Broad,	5 6 7 8	₩ doz	16.00	18.00	20.00	22.00

Collins.....dis 10 %

	Nos.				
Shingling,	1 2 3	₩ doz	$6 00	$6.50	$7.00
Claw,	1 2 3	₩ doz	6.50	7.00	7.50
Lathing,	1 2 3	₩ doz	6.50	6.50	7.00

Peck's Champion Blade.....dis 30 %

	Nos.				
Shingling,	1 2 3	₩ doz	$8.00	$8.50	$9.00
Lath,	1 2 3	₩ doz	8.00	8.50	9.00
Claw,	1 2 3	₩ doz	9.00	9.50	10.00
Half,	1 2 3	₩ doz	8.00	8.50	9.00
Ax Pattern,	1 2 3	₩ doz	10.00	11.00	12.00

Hay Knives.
"Lightning".....₩ doz $20.00, net
Wadsworth's.....dis 33⅓ %

Hinges.
Gate, Western.....₩ doz $6.25, dis 55&5&10 %
Gate, N. E.....₩ doz $10.13, dis 55&5&10 %
Gate, N. E. Reversible.....₩ doz $6.40, dis 55&5&10 %
Gate, Clark's, Nos. 1, 2 3.....dis 50 %
Gate, N. Y. State.....₩ doz $6.50, dis 60&10 %
Gate, Automatic.....₩ doz $12.50, dis 40 %
Gate, Common Sense.....₩ doz pair, $4.50, dis 10 %
Gate, Seymour's.....dis 45&10 %
Gate, Shepard's.....Nos. 10, 20 & 25, dis 50&10 %
Rolled Blind Hinges.....dis 60&10 %
Rolled Plate.....dis 60&10 %
Rolled Raised.....dis 60&10 %
Plate Hinges { 8, 10 & 12 in., $7.00 ₩ 100 ℔; "Providence" over 12 in., $6.00 ₩ 100 ℔ }...dis 10 %
Screw Hook and Strap { 8, 10, 12 in., $7.50 ₩ 100 ℔; 14 to 36 in., $6.50 ₩ 100 ℔ }..dis 10 %
Heavy Welded Hook { 8 to 12 in., $7.50 ₩ 100 ℔; 14 in. & up, $6.00 ₩ 100 ℔ } dis 20 %
Screw Hook and Eye { ⅝ & 1 in., 90; ¾ in., 90; ⅞ in., 100; 1 in., 120 } dis 20 %
Wrought Strap and T list, Dec. 30, '77.....dis 40&10&10 %

Hoes.
Riveted Shank.....₩ doz $5.00, dis 50 %
Socket.....₩ doz $5.25, dis 50 %
Grub.....dis 15 %
Planters'.....dis 40 %
Scovill Pattern.....dis 30 %
Scovill Pattern, Handled.....dis 30 %
Hick's Pat. Solid C. S. Planters'.....dis 20&10&30 %
Hick's Pat. Solid C. S. Scovill Pattern.....dis 20&5&35 %
Winsted & Lane, Planters'.....dis 25 %
Winsted & Lane, Scovill Pattern.....dis 20&25 %
Magic.....₩ doz, $5, net

Hooks.
Bird Cage, Sargent's list.....dis 55&10 %
Bird Cage, Reading.....dis 25&10&10 %
Cotton.....₩ doz $4.00, dis 50 %
Cotton, Patented (N. Y. Mallet & Handle Wks), dis 30 %
Cotton (Humason Beckley Mfg. Co.).....dis 40 %
Belt.....dis 60&10 %
Bench—Hotchkiss', $3 ₩ doz.....dis 10 %
Weston's, No. 1, $10.00; No. 2, $9.00 ₩ doz.....dis 25 %
McGill's, $3.00 ₩ doz.....dis 10 %
Clothes Line, Sargent's list.....dis 65&10 %
Clothes Line, Reading list.....dis 45&5&10 %
Ceiling, Sargent's list.....dis 60&10 %
Harness, Reading list.....dis 40&10 %
Coat and Hat, Sargent's list.....dis 60&10 %
Coat and Hat, Reading.....dis 40&10 %
Picture Hooks, Brown's Pat. Solid Brass, $4.00 ₩ gross.....dis 25 %
Tassel and Picture (T. & S. Mfg. Co.).....dis 50 %
Wrought Staples and Hooks and Staples.....dis 60&10 %
Wrought Staples, Stanley's list.....dis 60&10 %
Wire Screw Hooks and Eyes.....dis 55&10 %
Grass and Bush.....dis 45@50 %
Whiffletree—Patent.....dis 35 %
Hooks and Eyes—Malleable Iron.....dis 60&10 %
Hooks and Eyes—Brass.....dis 60&10 %

Horse Nails.

Ausable: Nos.	5	6	7	8	9	10	
Plain, ₩ ℔	300	270	250	240	230	20	dis 20&10 %
Finish'd, ₩ ℔	310	280	260	250	240	230	dis 20&10 %
Clinton, Plain, ₩ ℔	230	210	200	190	180		dis 20&10 %
Clinton, Fin., ₩ ℔	240	220	210	200	190		dis 20&10 %
Essex, ₩ ℔	310	280	260	250	240	230	dis 30 %
Putnam, "	310	280	260	250	240	230	dis 20 %
Vulcan, "	300	270	250	240	230	220	dis 10&10 %
Globe, "	310	280	260	250	240	230	dis 20 %
A. C., "	310	280	260	250	240	240	dis 20 %
Ch'mpl'in Forged "	280	250	230	220	210	200	dis 10 %

Horse Shoes.
Burden.....₩ keg $4.87½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy.....₩ keg $4.87½
Mule Shoes.....₩ keg $5.87½
Dunning's Steel.....₩ keg $9.25

Ice Awls, Chisels, &c.
American Ice Chisel.....₩ doz $3.50 net
National Ice Chisel.....₩ doz $6.25 dis 20 %
Novelty Ice Breakers.....₩ doz $6.25 dis 20 %
White's Sliding Head Picks.....₩ doz $2.50 dis 40 %
Dunlap's Ring Picks.....₩ doz $3.00 dis 40&10 %
Wood Head Picks, Sargent's.....₩ doz $1.60 dis 40&10 %
Iron Head Picks, Sargent's.....₩ doz $1.25 dis 40&10 %
Ice Mallets, Pick in Head.....₩ doz $1.75 dis 15 %
Ice Mallets, Pick in Handle.....₩ doz $2.00 dis 15 %
Ice Axes, Small Cast or Malleable...₩ doz $1.20 dis 10 %
Combination Ice Tools.....₩ doz $2.00 net

Ice Cream Freezers.
Amn. Mch. Co.....dis 40 %

Ice Tongs.
Champion.....₩ doz $6.00 dis 25&10 %
Family.....₩ doz $2.75 dis 15 %

Kettles.
Brass, 7 to 13 inches inclusive.....₩ ℔ 32c net
Brass larger than 13 inches.....₩ ℔ 35c net
Enameled.....dis 45 %

Knives.
Ames' Butcher Knives.....dis 20 %
Ames' Shoe Knives.....dis 15 %
Ames' Bread Knives.....₩ doz $1.50, dis 15 %
Moran's Shoe and Bread Knives.....dis 20 %
Hay and Straw, Wadsworth's.....dis 33⅓ %
Table and Pocket.....See Cutlery

Knobs.
Carriage (Jap'd 8cc ₩ gross).....dis 60&10 %
Base—Common.....dis 30&10 %
Hemacite Door Knobs.....new list, dis 35&5 %
Door, Mineral / Door, Por. Jap'd / Door, Por. Plated / Door, Por. } Same discounts as Door Locks.
Furniture, Plain.....75c gross inch, dis 10 %
Furniture, Wood Screws.....dis 20 %
Picture (T. & S. Mfg. Co.).....dis 60&10 %
Picture, Sargent's.....dis 60&10 %
Hemacite Picture.....dis 35 %
Shutter, Porcelain.....dis 50&10 %

Ladles.
Melting—Sargent's.....dis 45&10 %
Melting, Reading.....dis 25&10 %
Melting, Monroe's Patent.....₩ doz $4.00, dis 40 %
Melting, P. S. & W.....dis 30&10 %

Lanterns.
Tubular.....No. 0, $8.65; No. 1, $10.15; With Guards 35c extra } net
Nail City.....No. 1 ₩ doz, $10; No. 2, $9, net
Meteor.....No. 1, per doz, $9.50; No. 2, $8.50, net
Hurricane, No 2.....₩ doz, $5.75, net
Peerless.....No. 5, ₩ doz $11.75, dis 10&10 %
Brady's Patent.....dis 10&10 %
Ætna.....dis 10&20 %
Yankee.....dis 10&10 %
De Beque.....dis 10&10 %
Police..Small, $6.25; Med., $7.50; Large, $12.00, dis 10 %
Convex Reflector.....$2.75 ₩ doz, dis 10 %

Lawn Mowers.
Pennsylvania. Philadelphia and Excelsior, new list.....dis 30 %

Lemon Squeezers.
Porcelain Lined.....₩ doz $6.00, dis 30 %
Wood.....₩ doz 3.00, dis 30 %
Eureka, Tinned.....₩ doz $2.00, dis 10 %
Dunlap's Improved.....₩ doz $3.75 dis 20 %
Sammis' ..No. 1, $6; 2, $8 40; 10, $11 ₩ doz; dis 33⅓&10 %

Townsend's Patent.....$6.00 ₩ doz, dis 33⅓ %
Jennings "Star".....$3. ₩ doz net
The "Boss".....₩ doz $4.00, dis 10&10 %

Lines.—Linen Fish.....dis 25&10 %
Cotton Chalk.....dis 55 %
Sil. Lake Chalk.....Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50.....dis 25 %
Mason's Linen.....dis 25&10 %
Wire Clothes, Galvanized.....each 25c@40c net

Locks and Latches.
Cabinet, Eagle / Cabinet, Gaylord / Cabinet, Bridgeport } Changes made in list price of some numbers Jan. 1, 1881, dis 25&2 %
Cabinet, P. & F. Corbin.....dis 25&2 %
Cabinet, A. E. Deitz.....dis 30@40 %
Trunk, new list, Jan. 1, 1881.....dis 15&2 %
Langstroth & Crane's List, Jan. 1. '77
Round Key. Nos. 1 to 5.....dis 40&10 %
Round Key. Nos. 5½ to 12.....dis 40&10 %
Flat Key.....dis 33⅓&10 %
A. E. Deitz, Flat Key.....dis 30@40 %
Yale Lock Co., Flat Key.....dis 40 %
"Shepardson" or "U. S.".....dis 35 %
"Felter" or "American".....dis 33⅓ %
Plate.....dis 33⅓&2 %
F. Many's "Extension Cylinder".....$16.50 ₩ doz net

DOOR LOCKS, &C.

Branford / Norwalk / Norwich / P. & F. Corbin / Russell & Erwin / Mallory, Wheeler & Co. / Whipple Mfg. Co. / Trenton Lock Co. } List prices as revised March 8, 1882, dis 45&2 %
Reading Hardware Co.....dis
Padlocks—Russell & Erwin / Mallory, Wheeler & Co. / Norwich Lock Mfg. Co. / Wm. Wilcox & Co. } dis 35 % and 2 % for cash
Yale Lock Mfg. Co.'s "Standard".....dis 40 %
Romer's.....dis 30 %
Conestoga.....dis 60 %
The D. K. Miller, Flat Key.....dis 33⅓ %
Scandinavian (Moore Bros.).....dis 80 %
J. H. McWilliams.....dis 30
A. E. Dietz.....dis 35
"Star".....dis 35 %

Lustre.—4-oz. bottles, ₩ doz $2.00; ₩ gros $18.00 net

Mallets.—Hickory.....dis 10&10 %
Lignumvitæ.....dis 10&10 %
Penfield Block Co., Lig., Apple & Hickory.....dis 30 %

Meat Cutters.

Dixon's (P. S. & W.) Nos.	1	2	3	4	
₩ doz.	$14.00	17.00	19.00	30.00	dis 30 %

Miles' Challenge.....Nos.	1	2	3	
₩ doz.	$22.00	30.00	40.00	dis 35 %

Perry's.....Nos.	1	2	3	4	4 g'rd	5 g'rd	
Each	$3.00	4.00	5.00	11.00	13.00	36.00	dis 30 %

Woodruffs (P. S. & W.).....Nos.	100	150	
₩ doz.	$15.00	18.00	dis 30 %

Hales'.....Nos.	11	12	13	
₩ doz.	$27.00	33.00	45.00	dis 50&10&2 %

Draw Cut..Nos.	5	2	6	8	10	
Each	$50.00	75.00	80.00	225.00	400.00	dis 20 %

American.....dis 25 %

Nos.	1	2	3	4	B	5
Each	$5.00	7.00	10.00	25.00	50.00	60.00

Kieser's No. 55.....$40 ₩ doz., dis 40 %
Kieser's Gem.....$25 ₩ doz., dis 40 %
Silver & Deming.....dis 15 %
Pennsylvania.....dis 40&10 %

Nos.	1	2	3	00
₩ doz.	$24 00	28.00	36.00	28.00

Beef Shavers (Enterprise Mfg. Co.).....dis 25 %

Mincing Knives.
Am (2d quality), ₩ gross, 1 blade, 7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....dis 20&10 %
Smith's, ₩ doz, Single, $2.25; Double. $3...dis 33⅓&10 %
Cowles Hdw. Co.....dis 10&10 %

Molasses Gates.
Stebbins Pattern.....dis 70&10 %
Stebbins Genuine.....dis 75&10 %
Stebbins Tinned Ends.....dis 40&10 %
Chase's Hard Metal.....dis 50&10 %
Bush's.....dis 20 %
Lincoln's Pattern.....dis 60&10 %
Weed's.....dis 15 %

Boss, Nos.	1	2	3	4	
	$7.00	$8.00	$9.00	$10 00	per doz

Boss, Japanned Finish.....dis 60&10 %
Boss, Bronze Finish.....dis 50&10 %

Nails......See Trade Report

Nuts and Washers.—(In lots less than 100 ℔ add ½c to list)
Square Nuts.....7c off list
Hexagon Nuts.....7c off list
Washers.....6c off list

Nut Crackers.
Table (Humason & Beckley Mfg. Co.....dis 33⅓ %
Blake's Pattern.....₩ doz $2.50, net
Turner & Seymour Mfg. Co.....dis 50 %

Oakum.—Dis on 100 bales and over ⅓c ₩ ℔.
Best.....₩ ℔ 9 c
U. S. Navy.....₩ ℔ 8 c
Navy.....₩ ℔ 6½c

Oilers.—Zinc and Tin.....dis 60 %
Brass and Copper.....dis 50 %
Malleable (Hammer's).....₩ doz $5.00, dis 10 %
Prior's Patent or "Paragon" Zinc.....dis 60 %
Prior's Patent or "Paragon" Brass.....dis 50 %
Olmstead's, Tin and Zinc.....dis 60 %
Olmstead's, Brass and Copper.....dis 50 %
Broughton's, Zinc.....dis 60 %
Broughton's, Brass.....dis 60 %

Ox Balls.....dis 50&10 %

Packings, Steam.
N. Y. Belting and Packing Co.....dis 20 %

Pencils.
Faber's Carpenters'.....high list, dis 50 %
Faber's Round Gilt.....₩ gross $5.25, net
Dixon's Lead.....₩ gross $4.50, net
Dixon's Lumber.....₩ gross $6.75, net
Dixon's Carpenters'.....dis 40&10 %

Picture Nails.
Brass Head, Sargent's list.....dis 45&10 %
Brass Head. T. & S. Mfg. Co.....dis 50 %
Porcelain Head, Sargent's list.....dis 45&10 %
Porcelain Head, Judd's list.....dis 40 %
Porcelain Head, T. & S. Mfg. Co.....dis 40 %
Niles' Patent.....dis 25 %

Pinking Irons.....₩ doz 75c, net

Plaiting Machines.
Magic.....₩ doz $10.00, net
Astor Plaiting Machine.....each $15.00, dis 20 %
Crown Plaiting Machines.....dis 25 %
6 in., $6.00; 10 in., $8.00, each.

Planes and Plane Irons.
Bench, First Quality.....dis 20 %
Bench, Second Quality.....dis 25 %
Molding.....dis 15 %
Bailey's (Stanley R. & L.Co.) new list, Jan. '79.dis 20&10 %
The Stanley (S. R. & L. Co.) new list, Jan. '79..dis. 20&10 %
Bailey's "Victor".....dis 20&10 %
Defiance Adjustable.....dis 20&10 %
Laflin Mfg. Co.....dis 35 %
Plane Irons, Butcher's.....$5.50 to £
Plane Irons, Buck Bros.....$5.00 to £
Plane Irons Auburn Tool Co.'s.....dis 20 %
Plane Irons, The Globe Mfg. Co., "Baldwin Iron".....dis 20 %
Plane Irons, Ohio Tool Co.....dis 20 %
Plane Irons, Sandusky Tool Co.....dis 20 %

Pliers and Nippers.
Button's Patent.....dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $20; No. 4, 7 in. $30 ₩ doz.....dis 45 %
Humason & Beckley Mfg. Co.....dis 33⅓ %
Gas Pliers.....dis 40 %
Eureka Pliers and Nippers.....dis 30 %
Russell's Parallel.....dis 25 %
P. S. & W. Cast Steel.....dis 35 %
P. S. & W. Tinners' Cutting Nippers.....dis 15 %

Plumbs and Levels.
Disston's.....dis 40 %
Stanley R. & L. Co.'s Pat. Adjustable.....dis 65&[illegible] %
Stanley R. & L. Co.'s Non-Adjustable.....dis 65&[illegible] %
Chapin's Patent Adjustable.....dis 65&10&[illegible] %
Chapin's Non-Adjustable.....dis 65&10&[illegible] %
Standard Rule Co.'s New Adjustable.....dis 65&[illegible] %
Standard Rule Co.'s Non-Adjustable.....dis 65&[illegible] %
Johnson's Patent Adjustable.....dis 65&10 %
Pocket Levels.....dis 65&10 %
Davis' Inclinometers.....dis 20 %

Post Hole and Tree Augers.
Samson Post Hole Digger.....₩ doz $37.50, dis 20 %
Fletcher Post Hole Augers.....₩ doz $36.00, dis 20 %
Vaughan's Post Hole—6 in., $23.60; 7, 8 and 9 in., $25.00 ₩ doz.....dis 20&10 %
Eureka Diggers ₩ doz $27.00.....net
Leed's each $2.50.....net

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw ₩ doz $19.00, dis 20 %
Disston's Pruning Hook.....₩ doz $12.50, dis 20 %
E. S. Lee & Co.'s Pruner.....dis 33⅓ %
Pruning Shears.....₩ doz $5 50 @ 6.00
Wheeler, M. & Co.'s Combination. ₩ doz $12, dis 20&10 %
Dunlap's Saw and Chisel.....₩ doz $9.00, dis 40 %

Pulleys.
Hot House and Tackle.....dis 60&10 %
Jap'd Screw.....dis 60&5&10 %
Brass Screw.....dis 55&10 %
Jap'd Side.....dis 60&5&10 %
Jap'd Clothes Line.....dis 55&10 %
Hay Fork, Solid Eye.....$4.50; Swivel, $5.00, dis 50&10 %
Hay Fork, "Anti-Friction".....$6.75, dis 10&10 %
Hay Fork, "F" Common and Pat. Bushed.....dis 20 %
Hay Fork, Tarbox Pat. Iron.....dis 20 %
Shade Rack.....dis 50 %

Punches.
Belt or Drive.....₩ doz $2.00; 2.25; 2.50, dis 50 %
Bemis & Call Co.'s Cast Steel Drive.....dis 50&5 %
Bemis & Call Co.'s Springfield Socket.....dis 50&5 %
Spring.....₩ doz $7.00, dis 50&7½ %
Spring, Leach's Patent.....dis 15 %
Bemis & Call Co.'s Spring and Check.....dis 40 %
Solid, Tinners'.....₩ doz $1.44, dis 40 %

Rail.
Sliding Door, Wrought Brass.....₩ ℔ 43c dis 20 %
Sliding Door, Iron, Painted.....₩ foot 4c. dis 10&10 %

Barn Door.....Inch	½	⅝	¾	
Per 100 feet	$2.60	3.00	5.00	dis 10 %

B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet	$2.10	2.70	3.30—net

Terry's Wrought Iron. 5c. ₩ foot.....net

Razors.
J. R. Torrey Razor Co.....dis 15 %

Razor Straps.
Genuine Emerson....dis 60 @ 65 %
Badger's Emerson....dis 60 @ 65 %
Badger's (not Emerson)....dis 33⅓ %
Imitation Emerson....₩ doz $2.00, dis 20 %
Hunt's....dis 40&5 %
Chapman....dis 15 @ 20 %
Saunder's....dis 10 %
Torrey's....dis 20 %

Rivets.
Iron and Tinned, new list, Dec. 10, 1881....dis 40%
In bulk, new list, Dec. 10, 1881....dis 40 %
Copper Rivets and Burrs....dis
Nos.. 7 8 9 10 11 12 13 14 15 50 %
₩ ℔.. 490 500 530 540 560 580 600 650 700 40 %
Rivet Sets.....dis 40 %

Rods.
Stair, Brass....dis 25 %
Stair, Black Walnut....dis 40 %
Stair, American Patent....dis 20%

Rollers.
Barn Door, Sargent's list....dis 60&10&10 %
Acme (Anti-Friction)....dis 40 %

Rope.
Mnfs' Li't, June 5, 1882....dis 1¼c ₩ ℔
Manila....½ inch and larger ₩ ℔ 15 c
Manila....⅜ inch ₩ ℔ 15½c
Manila....¼ and 5-16 inch ₩ ℔ 16 c
Manila, Tar'd Rope....₩ ℔ 14½c
Manila, Tar'd Lath Yarn....₩ ℔ 14½c
Manila, Hay Rope....₩ ℔ 15 c
Sisal....½ inch and larger ₩ ℔ 10 c
Sisal....⅜ inch ₩ ℔ 10½c
Sisal....¼ and 5-16 inch ₩ ℔ 11 c
Sisal, Hay Rope....₩ ℔ 10 c

Rules.

	Boxwood.	Ivory.
Chapin's	dis 66⅔&10 %	dis 55&10 %
Standard		
Stanley		
Stephens	dis 66⅔&10 %	dis 55 %

Sad Irons.
From 4 to 10 ℔....₩ ℔ 3¾c net
Self-Heating....₩ doz $5.00 net
Self-Heating, Tailors'....₩ doz $18.00 net
Gleason's Shield and Toilet....dis 25 %
Mrs. Pott's Irons, Doubled Pointed....dis 35 %
Mrs. Pott's Irons, Square Back....dis 35 %
Enterprise Star Irons....dis 40 %
Combined Fluter and Sad Iron....₩ doz $15.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½ $4.75 ₩ ream
Baeder & Adamson's Flint, 2, 2½ & 3.. 5.25 ₩ ream
Baeder & Adamson's Flint, Assorted. 4.75 ₩ ream
Baeder & Adamson's Star.... 3.75 ₩ ream
Baeder & Adamson's Emery..₩ ream $6.50 @ 11.50
Bartles Flint....$4.75&$5.25 ₩ ream dis 35 %
Bartles Harr son, $3.75 ₩ ream....dis 35 %
New England same li-t as B. & A. Flint....dis 30 %
Gage's....dis 30&5 %

Sash Cord.
Common....₩ ℔ 18c net
Patent....₩ ℔ 20c net
Silver Lake, Hemp....₩ ℔ 50c, dis 10 %
Silver Lake, white Cotton....₩ ℔ 50c, dis 10 %
Silver Lake, Drab Cotton....₩ ℔ 55c, dis 10 %
Raw Hide....dis 25 %
Steel Ribbon....dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross....dis 33⅓ %
Ferguson's....dis 33⅓ %
Walker's....net
Hammond's Window Springs....dis 25 %
Northup Window Springs, No. 1, $10.00 ₩ gross....dis 15 %
The Perfect, Clark & Smith, Plain Jap. ₩ gro. $10.00 net
The Perfect, Clark & Smith, For. K'b Jap. ₩ gro. $14 net
The Perfect, Clark & Smith, N-Plated.. ₩ gro. $27.00 net
"Universal"....dis 30 %

Sash Weights.
Solid Eyes, in 400 ℔ lots and over....₩ ℔ 1¾c net

Sausage Stuffers or Fillers.
Miles....₩ doz $20 dis 30 %
Perry....₩ doz, No. 14; No. 0, $21, dis 30 %
Straw Cut No. 4....each $30.00, dis. 20 %
Enterprise Mfg. Co....dis 25 %
Silver's....dis 25 %

Saws.
Disston's Circular....dis 40 %
Disston's Mill....dis 40 %
Disston's Cross Cut....dis 40 %
Disston's Hand, Panel, Rip, &c....dis 20 %
Boynton's Lightning Cross Cuts, new list....dis 20 %
Boynton's One-Man, all lengths, new list....dis 20 %
Boynton's Billet Webs, 30 inch, new list....dis 25 %
Boynton's Lightning Buck Saws X Bar....dis 25 %
Boynton's Lightning Hand, Panel and Rip....dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand....dis 30 %
W. M. & C. Mfg. Co. Cross Cuts....dis 30 %
Livingston's Butcher and Kitchen....dis 20 %
Livingston's Framed Wood—

Nos	101	102	103	104	105
Per doz	$10.00	$ 00	10.00	7.50	5.20 net

Peace Circular and Mill....dis 40 %
Peace Hand, Pamb and Rip....dis 25 %
Peace Cross Cuts....dis 35 %
Peace Band Saws, all widths....dis 10 %

Saw Frames.
White, Vermont....₩ doz $1.05, dis 10%
Red, Polished and Varnished....₩ doz $1.50, dis 10%
Saw Rods....$10 list, dis10 & 10%

Saw Sets.
Boynton's Patent X Cut, per doz, $12.00; Hand Saw per doz, $10.00....dis 20 %
Stillman's Genuine....₩ doz $3.50 and $4.50 dis 10 %
Stillman's Imitation....₩ doz $3.25, dis 30&10 %
Common Lever....₩ doz $2.00, dis 30&10 %
Leech's....No 0, $5.00; No. 1, $15.00, dis 15 %
Nash's....dis 20&10 %
Hammer, Hotchkiss....$5.50, dis 10 %
Hammer, Bemis & Call Co.'s new Patent....dis 30&5 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 30&5 %
Bemis & Call Co.'s Plate....dis 10 %
Bemis & Call Co.'s Cross Cut....dis 12½ %
Aiken's Genuine....$13.00, dis 50&10 %
Aiken's Imitation....$7.00, dis 50 %
Hart's Patent Lever....dis 20 %
Disston's....dis 20 %
Morrill's....No. 1, $15; No. 5, $42, dis 35&10 %

Scales.
Hatch, Counter, No. 171....₩ doz $42, dis 37½&10 %
Hatch, Tea, No 161....₩ doz $15.00, dis 37½&10 %
Union Platform....$6.00, dis 45 %
Fairbanks'....dis 20 %
Buffalo Scale Co....dis 20&5 %
Forsyth Scale Co....dis 25 %
Howe's....dis 20&10 %
Chatillon's Grocers'....dis 40 %
Chatillon's Eureka....dis 25 %
Family Universal....dis 50 %
Family Favorite....dis 30 %
Family, Turnbull's....dis 30 %
Scale Beams, List of January 12, 1882....dis 33⅓&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.00, dis 20&10 %
Box, 1 Handle....₩ doz $4.00, dis 10 %
Box, 2 Handle....₩ doz $6.00, dis 10 %
Defiance Box and Ship....dis 20&10 %
Foot....dis 45&10 %
Ship, common....₩ doz $3.00 net
Ship, Providence Tool Co....dis 10 %

Screen Corners.
Porter's Pat. Window and Door Frame....dis 33⅓

Screw Drivers.
Douglas Mfg. Co....dis 20&10&10 %
Disston's....dis 40 %
Disston's Patent Excelsior....dis 40 %
Buck Bros....dis 25 %
Stanley Rule & Level Co.'s, Varnished Hdls..dis 40&10 %
Stanley Rule & Level Co.'s, Black Handles..dis 40&10 %
Sargent & Co.'s....dis 50&10 %
Gay's Double Action Ratchet
₩ doz, 4 in., $6.00; 5 in., $10.20; 6 in., $12.00—dis 35 %
Mallett & Co.'s Double Action Clutch
₩ doz, 4 in., $7.00; 5 in., $8.00; 6 in., $9.00—dis 15 %
Champion....dis 25 %
Cowles Hdw. Co., No. 1 Extra....dis 40&10 %
Cowles Hdw. Co., No. 1....dis 40&10 %
Cowles Hdw. Co., Nos. 4 and 00....dis 30 %
Clark's Patent....dis 20&10 %

Screws.
Flat H'd Iron....New list April 27, 1881....dis 30 %
Round Head Iron..New list April 27, 1881....dis 25 %
Flat Head Brass...New list April 27, 1881....dis 30 %
Round Head Brass..New list April 27, 1881....dis 20 %
Brass and Silver Capped....dis 40 %
Japanned, list of Plain Screws....dis 20 %
Coach, Patent Gimlet Point....dis 00 %
Coach, Common or Lag....dis 60 %
Bed....dis 10 %
Machine, Flat Head, Iron....dis 55 %
Machine, Round Head, Iron....dis 50 %
Bench, Iron....dis 55&10 %
Bench, Wood, Beech....₩ doz $3.00, dis 10 %
Bench, Wood, Hickory....dis 20&10 %
Hand, Wood....dis 20&10 %
Hand Rail, Sargent's....dis 60&10 %
Hand Rail, Hunnson, Beckley & Co.'s....dis 40&10 %
Hand Rail, Am. Screw Co., list of Jan. 1, '81....dis 70 %
Jack (Wilson's)....dis 25 %

Screw Window Balances.
R. R. Huguniu's, No. 1, $2.10; No. 2, $1.75; No. 3 $1.50....₩ doz net

Scro'l Saws.
Lester, $10.00....dis 25 %
Rogers, $3.50....dis 25 %

Shears and Scissors.
American (Cast) Iron....dis 70 %
Pruning....see Pruning Hooks and Shears.
Barnard's Lamp Trimmers....₩ doz $3.75
Tinners'....dis 1 %
Seymour's, List, Dec., 1881....dis 60 %
Heinsch's, List, Dec., 1881....dis 60 %
Heinsch's Tailor's Shears....dis 33⅓ %
Mass. Cutlery Co. St. Trimmers....dis 75 %

Sheaves.
Sliding Door, M. W. & Co., list....dis 45&2 %
Sliding Door, R. & E. list....dis 60&10&2 %
Sliding Door, Patent Roller....dis 60&10&2 %
Sliding Door, Patent Roller, Hatfield's....dis 60&10&2 %
Sliding Door, Russell's Anti-Friction....dis 60&10&2 %
Sliding Door, Moore's Anti-Friction....dis 45 %
Sliding Shutter, R. & E. list....dis 50&10&2 %
Sliding Shutter, Sargent's list....dis 50&10 %
Sliding Shutter, Reading list....dis 50&10 %
Moore's Anti-Friction (Hanging)....dis 45 %

Shovels and Spades.
Ames, New list, July 1, 1881....dis 15 %
Griffiths....dis 40&10 %
Old Colony....dis 15 %
Payne Pettebone & Son, new list....dis 40&10 %
Payne Pettebone & Son, R. R. Shovels....dis 15 %
Remington's (Lowman's Patent)....dis 30 %
Rowland's....dis 40&10 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list....dis 60&10&2 %
Polished Steel, new list....dis 50&10&2 %

Slates.
Square Frames, by case....dis 70 %
Less than a case....dis 65&10 %

Sledges and Stone Breakers.
Nelson Tool Works....dis 40&10 %

Spoke Shaves.
Defiance Metallic....dis 20&10 %
Iron....dis 45 %
Wood....dis 30&10 %
Bailey's (Stanley R. & L. Co.), new list....dis 30&10 %
Stearns'....dis 30&10 %

Spoke Trimmers.
Bonney's....₩ doz $10.00, dis 40&5 %
Stearns'....₩ doz $9.00, dis 20&10 %
Ives'....No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 55&10 %
Douglass'....₩ doz $9.00, dis 15 %

Spoons.
Basting....dis 60&10&10 %
Riveted Table and Tea....dis 55 %
Solid Table and Tea....dis 55 %
Britannia....dis 60 %
Reed & Barton....dis 40&5&5 %
Hall & Elton....dis 40&5&5 %
Holmes, Booth & Haydens....dis 40&5&5 %
German Silver....dis 30&10 %
Cast Steel, Silver Plated....dis 33⅓ %
Tin (P. S. & W.), Teas....$1.25 ₩ gross, net
Tin (P. S. & W.), Tables....$2.00 ₩ gross, net
Tin (Cowles Hdw. Co.)....dis 10 %
Tin (Cowles Hdw Co.), case lots....dis 20 %

Stocks and Dies.....dis 5&10 %
"Lightning" Screw Plate....dis 10 %

Stone.
Hindostan No. 1, 60; Axe, 80....dis 40 %
Hindostan Hacker Stone....₩ gross $12.00 dis 10 %
Sand Stone....₩ ℔ 6c, dis 33⅓&10 %
Washita Stone....No. 1, ₩ ℔ 20c net
Washita Stone....No. 2, ₩ ℔ 16½c net
Washita Stone, Slips....No. 1, ₩ ℔ 40c net
Arkansas Stone No. 1. 4 to 6 in....₩ ℔ $1.35 net
Arkansas Stone No. 1. 6 to 9 in....₩ ℔ $2.00 net
Turkey Oil Stone (Chase)....4 to 8 in., $1.00 ₩ ℔
Turkey Slips (Chase)....$2.10 ₩ ℔ dis 10 %
Lake Superior (Chase)....₩ ℔ 20c, dis 10&5 %
Lake Superior, Slips (Chase)....₩ ℔ 45c, dis 10&5 %
Grindstones, Family, Loring's....dis 10 %

Stove Polish.
Joseph Dixon's....₩ gross $6.00, dis 10 %
Gem....₩ gross $4.50, dis 10 %
Gold Medal....₩ gross $6.00, dis 25 %
"Mirror"....₩ gross $6.00, dis 5 %
Ruby....₩ gross $3.75, net
Rising Sun....₩ gross $5.75, net
Dixon's Plumbago....₩ ℔ 60, net

Squares.
Steel....dis 50 %; full cases, dis 50&10 %
Iron....dis 10 %; full cases, dis 50&10 %
Nickel Plated....add $2.50 @ $4.00 ₩ doz, net
Try Square and T Bevels....dis 50&10 %
Disston's Try Square and T Bevels....dis 40 %
Winterbottom's Try and Mitre....dis 20&10 %

2 % cash

Tacks, Brads, &c.
List of April 2, 1880.
Tinned Swedes Tacks....dis 40 %
Tinned American Tacks....dis 50 %
Swedes Tacks, all kinds....dis 30 %
Copper Tacks and Nails....dis 35 %
Swedes Hungarian Nails....dis 30 %
Gimp and Lace Tacks....dis 30 %
Gimp and Lace Tacks, Tinned....dis 40 %
Finishing Nails....dis 25 %
Trunk and Clout Nails....dis 25 %
Common and Patent Brads....dis 25 %
Basket Nails....dis 25 %
Brush Tacks....dis 20 %
Leathered Carpet Tacks....dis 20 %
American Cut Tacks....dis 25 %
Cigar Box Nails....dis 33⅓ %
Chair Nails....dis 33⅓ %
Double-pointed Tacks....dis 40&5 %

Extra 10 % on all.

Tap Borers.
Common and Ring....dis 20 %
Ives' Tap Borers....dis 15&10 %
Enterprise Mfg. Co....dis 25 %

Tapes, Measuring.
American....dis 20 %
Spring....dis 25&10 %

Thermometers.
Tin Case....dis 70&10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)....dis 25 %
Wood Bottom....₩ doz $12.00, dis 40&5 %
All Iron....₩ doz $9.50, dis 40&5 %
Nashua Lock Co.'s....₩ doz $16.00, dis 50&5 %
Wilson's....dis 35 %

Toe Calks.
Winsted....₩ ℔ 9c, dis 5

Tinners' Tools and Machines.
Machines (P. S. & W.)....list add 20 %
Tools (P. S. & W.)....add 6 %

Transom Lifters.
Wollensak's Patent....dis 35 %
Reiher's Patent, new list, Feb., 1882....dis 20&10&10 %
Excelsior....dis 50&10&2 %

Traps.
Game, Newhouse....dis 35 %
Game, Oneida Pattern....dis 55&5 %
Game, Blake's Patent....dis 40 %
Mouse, Wood, Choker....₩ doz holes, 16½c
Mouse, Round Wire....₩ doz $1.50, dis 10 %
Mouse Cage, Wire....₩ doz $2.50, dis 10 %
Mouse, Catch-em-alive....₩ doz $2.50, dis 10 %
Rat, "Decoy"....₩ doz $10.00, dis 10 %

Trowels.
Lothrops' Brick and Plastering....dis 25 %
Reed's Brick and Plastering....dis 15 %
Disston's Brick and Plastering....dis 20 %
Peace's Plastering....dis 15 %
Clement & Maynard's....dis 20 %
Rose's Brick....dis 15 %
Bradee' Brick....dis 20 %
Worrall's Brick and Plastering....dis 20 %
Garden....dis 55 %

Triers.
Butter and Cheese....dis 25 %

Trucks (Warehouse, &c.
Penfield Block Co., Reduced list March 4, 1882..dis. 25 %

Vises.
Solid Box....List of July 1, 79, dis 35 %
Solid "Crown" (A. H. Hilditch)....40 to 100 ℔, 15c net
Solid, Peter Wright's....13½c
Solid, Wilkinson's....13½c
Parallel, Parker's....dis 10 %
Parallel, Wilson's....dis 35&10 %
Parallel, Howard's....dis 20&10 %
Parallel, Merrill's....dis 15 %
Parallel, Sargent's....dis 55&10 %
Parallel, Backus and Union....dis 40 %
Parallel, Oval Slide....dis 40 %
Parallel, Double Screw Leg....dis 15&10 %
Parallel, Prentiss....dis 25 %
Parallel, Simpson's Adjustable....dis 25 %
"Family," List....not
Saw Filers, Bonney's....₩ doz $14.00, dis 20&10 %
Saw Filers, Stearn's....dis 20&10 %
Saw Filers, Hopkins'....₩ doz $17.50, dis 10 %
Reading....dis 45&10 %
Cowell Hand Vises....dis 20 %
Richardson's Vise and Anvil....dis 25 %

Washer Cutters.
Smith's Patent....₩ doz $12.00, dis 25 %
Johnson's....₩ doz $11.00, dis 33⅓ %
Penny's....₩ doz $14.00 and $16.00, dis 55 %
Appleton's....₩ doz $16.00, dis 50&10 %

Washers.—See Nuts and Washers.

Well Wheels....dis 60&10&10 %

Wire.
Brass and Copper, list of June 10, 1880....dis 20 %
Bright and Annealed....Nos. 0 @ 18, dis 50 @ 53½ %
Bright and Annealed....Nos. 19 @ 26, dis 60 %
Bright and Annealed....Nos. 27 @ 36, dis 65 %
Coppered....Nos. 0 @ 18 dis 45 @ 47½ %
Galvanized, Nos. 0 to 18....market list, dis 40 @ 42½ %
Tinned, Nos. 0 to 18....dis 40 @ 45 %
Cast Steel....dis 40 %
Tinned Broom Wire, Nos. 18 to 25....dis 55 %
Annealed Fence, Nos. 8 & 9....dis 55 @ 53½ %
Annealed Grape, Nos. 10 to 14....dis 50 @ 53½ %
Galvanized Telegraph, Nos. 7 to 9....₩ ℔ 7½c
Galvanized Telegraph, Nos. 10 to 11....₩ ℔ 8½c
Galvanized Telegraph, No....₩ ℔ 10½c
Fence Staples....₩ ℔ 5½ @ 6½c
Fence Staples, Galvanized....₩ ℔ 7 @ 7½c
Stubs Steel Wire....$7.00 to $
Japanned Barb Fence....₩ ℔ 8½c
Galvanized Barb Fence....₩ ℔ 9½c
Steel Music Wire, Nos. 12 to 27....₩ ℔ $1.25, net
Turner & Seymour Mfg Co., Picture Wire, low list....dis 40 %
Judd's Picture Wire....dis 40 %
Clothes Line Wire, Galvanized....₩ coil 25 @ 400 net
Wire Cloth, green, drab and black....₩ sq. ft., 2½c net

Wrenches.
American Adjustable....dis 45 %
Baxter's Adjustable "B," list Jan., 1880....dis 20&5 %
Baxter's Diagonal....dis 20&5 %
Coes' Genuine....dis 40&10 %
Coes' "Mechanics"....dis 40&10&10 %
Coes' Pattern, Malleable....dis 75 %
Coes' Pattern Wrought....dis 60 %
Girard Standard....dis 60&10 %
Girard Agl....dis 60&10 %
Bemis & Call's Patent Combination....dis 20 %
Bemis & Call's Merrick 'sPattern....dis 35 %
Bemis & Call's Brigg's Pattern....dis 25 %
Bemis & Call's Cylinder or Gas Pipe....dis 40 %
Van Wagoner & Williams' Basin....₩ doz $4.50
Aiken Pocket (Bright)....$6.00, dis 50&10 %
The Favorite Pocket (Bright)....₩ doz $8, dis 50 %
Webster's Patent Combination....dis 25 %

Wringers.

	Per doz.
Universal, XX, No. 2½	45.00
Universal, XX, No. 2	40.00
Universal, XX, No. 1½	54.00
Universal, XX, No. 1	60.00
Universal, XX, No. 8	each 10.75
Universal, XX, No. 12	each 20.25
Universal, XX, No. 18	each 22.75
Universal, XX, No. 22	each 30.25

NEW YORK WHOLESALE PRICES, July 5, 1882.

METALS.

IRON.—DUTY. Bars, 1 to 1½c. ₱ lb; Sheet, Band and Hoop and Scroll, 1¼ to 1⅜c. ₱ lb; provided, that none of the above iron shall pay a less rate of duty than 45 per cent. Pig, $7 ₱ ton; Polished Sheet, 3c. ₱ lb; Wrought Scrap, $8 ₱ ton; Cast Scrap, $6 ₱ ton. Railroad, 70c. ₱ 100 lb. Boiler and Plate, 1½c. ₱ lb.

American Iron		
Foundry, No. 1X	₱ ton	$25 00
Foundry, No. 2X	₱ ton	24.00
Gray Forge	₱ ton	24.00
Scotch Iron.		
Eglinton	₱ ton	27.00
Carnbroe (to arrive)	₱ ton	24.50 @ 25.00
Coltness	₱ ton	26 50 @ 27.00
Glengarnock	₱ ton	24.50 @ 25.00
Cartsherrie	₱ ton	26.50
Langloan	₱ ton	25.50 @ 26.00
English Iron.		
Redcar No. 1	₱ ton	22.50
Rails.		
Iron	₱ ton	Nominal.
Steel, at mill	₱ ton	47.50 @ 50.00
Old Rails T1	₱ ton	26.00 @ 26.50
Old Rails D H	₱ ton	27.50 @ 28.00
Scrap.		
Wrought Scrap ₱ ton, from yard		29.00 @ 30.00
Wrought Scrap to arrive		27 00 @ 27.50
Steel Crop Ends		23.50 @ 24.00
Bar Iron from Store.		
Common Iron ¾ to 1 in. round and square; 1 to 6 in. x ⅜ to 1 in.	₱ lb	@ 2.6c
Refined Iron: ¾ to 1 in. round and square; 1 to 6 in. x ⅜ to 1 in.	₱ lb	2.8
1 to 6 in. x ¾ and 5-16	₱ lb	3
Rods—⅝ and 11-16 round and square	₱ lb	2.9
Bands—1 to 6x3-16 to No. 12	₱ lb	3.2
Norway Nail Rods		4¼ @ 4½c

Sheet Iron.

	Common American	R. G. American.
Nos. 10 to 20	₱ lb 4 c	5 c
21 to 24	₱ lb 4¼c	5 c
25 to 26	₱ lb 4¼c	5¼c
27	₱ lb 4¾c	5¾c
28	₱ lb 5 c	5¾c
	B. B.	2d qual.
Galvanized, 10 to 20	₱ lb 8 c	7 c
Galvanized, 21 to 24	₱ lb 8¾c	7¾c
Galvanized, 25 to 26	₱ lb 9¼c	8 c
Galvanized, 27	₱ lb 10¼c	8¾c
Galvanized, 28	₱ lb 11 c	9 c
Patent Planished	'A ₱ lb 10½c	B. 9½c
Russia	₱ lb 11½ @ 12 c	
American Cold Rolled	₱ lb 5 c @ 7½c	

COPPER.—DUTY: Pig, Bar and Ingot, 5c; Old Copper 4c ₱ lb; Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

American Ingot ₱ lb See Trade Report.

SHEATHING BRAZIERS COPPER, BOLTS, &c.

Brazier's Copper, ordinary sizes, 16 oz. per sq. ft., and 0 oz ₱ lb	30c
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ₱ sq. ft.	₱ lb 32c
Braziers' Copper, 10 oz. and 12 oz., ₱ sq. ft.	₱ lb 34c
Braziers' Copper, Lighter than 10 oz. ₱ sq. ft.	₱ lb 36c
Circles less than 84 in. in diameter	₱ lb 33c
Circles 84 in. diameter and over	₱ lb 36c
Segment and Pattern Sheets	₱ lb 33c
Locomotive Fire Box Sheets	₱ lb 30c
Sheathing Copper, over 12 oz. ₱ sq. ft.	₱ lb 28c
Bolt Copper	₱ lb 30c
Copper Bottoms	₱ lb 31 @ 32c

No Copper is Sheathing except 14x40 inches, and not to exceed 34 oz. to the sq. ft.

TINNING.

Sheets 14 x 48	₱ sheet 6c

All other size Sheets, 2½c ₱ sq. ft.
For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.—Net.

14x48.

4 and 16 oz. and heavier	₱ lb 37c
2 oz. and lighter	₱ lb 40c

Boiler Sizes.

7 in., 14x42. 8 in., 14x46. 9 in., 14x60.

14 and 15 oz. and heavier	₱ lb 39c

By the case. ₱ lb 38c
(And all sizes not over 20 in. wide.)

24x48&30x60.

14 and 16 oz. and heavier	₱ lb 41c
12 oz	₱ lb 44c

BRASS.

Brown & Sharp's Gauge the Standard for Metals.
Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis. 30 %.
June 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantities than 100 lbs add 30. ₱ lb.

HIGH BRASS.

All Nos. not thinner than to No. 26, wider than 2 in., not wider than 14 in. 30c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive 35c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 38c

½c. ₱ lb advance on each No. above Nos. 28 to 36, inclusive.

All Brass thinner than No. 38 is Platers' Brass, at 53c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in. in width wider than 2 in. 37c
Printers' Rules 45c
Sheets wider than 30 in. and under 40 in. 47c
" 40 in. and over 50c
Circular Sheets, in diam. from 4 in. to 14, inclusive 40c
" over 14 " 20, " 45c
" " 20 " 30, " 49c
" " 30 " 40, " 55c
" " 40 in. 59c

LOW BRASS.

c ₱ lb more than High Brass.
Gilding Metal, 8c ₱ lb more than High Brass.
Platers' or Gold Metal: in Bars 48c; Sawed 51c; Planed or Polished 54c

FOR SLITTING.

Metal, in width 1 in. to ⅛ in. to No. 28, inclusive, 10 ₱ lb advance.
Metal, in width 2 in. to 1 in. thinner than No. 28, 20 ₱ lb advance.
Metal, in width 1 in. to ⅛ in. thinner than No. 28, 30 ₱ lb advance.
Metal in width ⅛ in. to ¼, inclusive, not thinner than No. 28, 2c ₱ lb advance.
Metal, in width ⅛ in. to ¼ thinner than No. 28, 40 ₱ lb advance.
Metal, ¼ in. in width and less, 10c ₱ lb advance.
Any of the above widths cut to particular lengths, add 70 ₱ lb.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire
4 per cent., 12 inch to No. 26	$0.52	$0.70
6 " " "	.56	.76
10 " " "	.64	.88
15 " " "	.74	1.03
18 " " "	.83	1.12

German Silver Sheets over 12in. wide and weighing more than 10 lb., $2 ₱ lb.
Advance 2c. for each additional inch in width above 12 in. and 20. ₱ lb on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner that No. 36 is Platers', at 50c. ₱ lb additional.
German Silver Scrap, one-half less than net price of 12in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.33	$0.37	$0.48
No. 21	.36	.40	.48
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No. 24	.40	.44	.50
No. 25	.43	.47	.53
No. 26	.45	.49	.55
No. 27	.48	.52	.58
No. 28	.52	.56	.63
No. 29	.55	.59	.66
No. 30	.58	.62	.72
No. 31	.62	.66	.76
No. 32	.66	.70	.84
No. 33	.70	.74	.93
No. 34	.74	.78	1.03

Spring Wire 20 ₱ lb advance.
Flat, Square and Half-Round Wire 50 ₱ lb advance on Round Wire.
Fancy Wire not less than 100 ₱ lb advance on Round Wire.
Brass Rods, No. 8 and larger, not less than 2 feet lengths, 38c.
Wire straightened and cut smaller than No. 8 and not less than 2 feet lengths, 43c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per lb extra for spooling on 1 lb spools to No. 36.

MISCELLANEOUS.

Brass Pail Ears	$0.50
Brass Door Rail	.43

SCRAP.—Net.

High Brass Scrap	12c
Low Brass Scrap	14c
Gilding	16c

Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis. 30 %.

	₱ lb
Plain No. 20 inclusive above ¼ in. to 3 in.	$0.42
Plain above 3 in.	.45

Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.

Plain, ¼ inch	.70
Plain, 3-16 inch	1.10
Plain, ⅜ inch	1.60

All Mandrel Drawn Tubes, 6 cents advance on List Prices.
Fancy Tubing to No. 20 50
English, Scotch and Extra Patterns Fancy Tubing to No. 20 55
Tubing sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add two cents ⅛ cent for each additional cutting under 2 feet

All Mandrel Drawn Tubes under ⅜ in. 25 cents per pound advance.

ZINC TUBING—dis. 25 %.

Plain	.27
Fancy	.33
Scotch and Extra Patterns	.36

GERMAN SILVER TUBING.—dis 25 %.

4 Per cent	.80
6 Per cent	.90
9 Per cent	1.00
12 Per cent	1.20
15 Per cent	1.35
18 Per cent	1.45
18 Per cent	1.10
2 Per cent	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7c ₱ lb, or under, 2¼c; over 7c and not above 11, 3c ₱ lb; over 11, 3½c ₱ lb, and 10 % ad val. Railway Bars, 1¼c ₱ lb. Railway Bars, in part Steel, 1c ₱ lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.

Best Cast	₱ lb 15½c
Extra Cast	₱ lb 10½c
Round Machinery, Cast	₱ lb 10c
Swaged, Cast	₱ lb 18c
Best Double Shear	₱ lb 15½c
Blister, 1st quality	₱ lb 13c
German Steel, Best	₱ lb 11c
2d quality	₱ lb 10c
3d quality	₱ lb 9c
Sheet Cast Steel, 1st quality	₱ lb 15½c
2d quality	₱ lb 14½c
3d quality	₱ lb 12 4c
ANTIMONY	See Trade Report
LEAD.—DUTY: Pig, $2 ₱ 100 lb	Old Lead, 1½c ₱ lb
Pipe and Sheet, 2½c ₱ lb.	
American	4¼
Bar	6¼c. net
Pipe	7½c, dis 10 %
Tin Lined Pipe	15c, dis 10 %
Sheet	8c, dis 10 %
Shot	Drop 7c, Buck, 8c
Chilled Shot	8c

BABBITT METAL.

N. P. U	₱ lb 9c
A. 28c; B. 22c; C. 15c	

TIN.—DUTY: Plates, Sheets Tagger and Terne, 1.1c ₱ lb; Electro-galvanized Plates, 2c ₱ lb; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.

Banca	₱ lb 28 @ 29c
Straits	₱ lb 24 @ 25c
English	₱ lb 24 @ 25c

TIN PLATES.

I C 10x14 } I C 14x20 } Prime Charcoal	$6.25 @ 6.50
I C 12x12 Prime Charcoal	6.50
I X 10x14 } I X 14x20 } Prime Charcoal	8.25
I X 12x12, Prime Charcoal	8.50
D C 12½x17, Prime Charcoal	6.00
D X 12½x17, Prime Charcoal	8.00
For each additional X add	2.00

COKE TIN PLATE.

	Best.	Ordinary.
I C 10x14 } I C 14x60 }	$5.75	$5.25 @ 5.50
I C 12x12	6.00	5.50 @ 5.75

TERNE PLATE.

	Prime Char.	2d Qual.	Coke.
I C 14x20	$5.50 @ 5.75	5.37½ @ 5.50	5.25 @ 5.37½
I X 14x20	7.50	....	....
I C 20x28	11.50 @ 11.75	11.00 @ 11.25	10.75 @ 11.00
I X 20x28	15.50	....	....
I C 20x20	10.50	....	....
I C 14x20 M. F. Brand	7.75 @		

SOLDER—¼ & ⅓ 14½c
Extra 14½c
No. 1 13c
SPELTER.—DUTY: In Pigs, Brs and Pites, $1.50 ₱ 100 lb. 6 @ 6¼c
American, cash
ZINC.—DUTY Pig or Block, $1.50 ₱ 100 lb; Sheet, 2½c ₱ lb.

Sheet, Cask	7½
Sheet, Open	8

Paper Stock, &c.

(*Dealers' Selling Prices.*)

	Cents ₱ lb
White Shirt Cuttings, No. 1	7½ @ 8
White Shirt Cuttings, No. 2	5 @ 5¼
Mill Assorted Whites	5¼ @ 5½
Unbleached Muslins	6¼ @ 6¾
City Whites, No. 1	4⅝ @ 4¾
New Canton Flannels	6¼
New Seconds, light	3¾ @
New Seconds, dark	3¼ @ 3½
No. 2 Whites	2½ @ 2¾
Cotton Canvas	4¾ @ 4¾
Linen Canvas, No. 1	4 @ 4¼
Seconds, City No. 1	1¾ @ 2
Seconds, City No. 2	1¼ @ 1½
Colors, per 100 lbs	70 @ 90
Manila Rope	3½ @ 3¾
Manila Rope, Tarred	3¼ @ 3½
Gunny Bagging, No. 1	2¾ @ 2¾
Gunny Bagging, No. 2	1½ @ 2
Kentucky Bagging	4¼ @ 4¾
Burlap Bagging, No. 1	2¾ @ 2¾
Tar Shakings	2 @ 2½
Hemp Twine Stock	4¼ @ 4¾
Hard White Shavings, No. 1	4¼ @ 4½
Soft White Shavings, No. 1	3 @ 3¼
White Shavings, No. 2, soft	3 @ 3¼
Mixed Shavings, part white	2½ @ 3
Ledger and Writing	3½ @ 3¾
Solid Stock	2¾ @ 3
Book Stock, No. 1, light	1¾ @ 1¾
Old Newspapers	1¾ @
Pure Manilas	2½ @ 2¾
Bogus Manilas and Hardwares	1 @ 1½
Commons per 100 lbs	75 @ 80
Binders' Board Cuttings	1¾ @ 1¾
Straw Board Cuttings	1 @

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₱ lb 30c
Black Lamp, Ordinary	₱ lb 6c
Black Ivory Drop, fair	12 @ 15c
Black Ivory Drop, best	23c
Black Paint, in oil	kegs 8c; asst'd cans, 11c
Blue Prussian, fair to best	40 @ 55c
Blue Prussian, fair to best, in oil	45 @ 55c
Blue Chinese dry	70c
Blue Ultramarine	18 @ 30c
Brown, Spanish	14c
Brown, Van Dyke	10 @ 12c
Green, Chrome	15 @ 23c
Green, Chrome, in oil	14 @ 18 @ 25c
Green, Paris	good, 25c; best, 30c
Green, Paris, in oil	good, 30c; best, 45c
Iron Paint, Bright Red	₱ lb 2½c
Iron Paint, Brown	₱ lb 1½c
Iron Paint, Purple	₱ lb 3 c
Iron Paint, Ground in oil, Bright Red	₱ lb 4½c
Iron Paint, Ground in oil, Red	₱ lb 5 c
Iron Paint, Ground in oil, Brown	₱ lb 4½c
Iron Paint, Ground in oil, Purple	₱ lb 6 c
Mineral Paints	2 @ 4c
Orange Mineral	10c
Red Lead, American	7½c
Red Venetian (Eng.) dry	$1.65 @ $1.70
Red Venetian, in oil	asst'd cans, 11c; kegs, 8c
Red Indian dry	9 @ 12c
Rose Pink	10 @ 13c
Sienna, American, Raw	14c
Sienna, Burnt	4½c
Sienna, Burnt, in oil	10 @ 16 @ 20c
Sienna, Raw	11 @ 15 @ 25c
Umber, Burnt	4 @ 8c
Umber, Burnt, in oil	9 @ 12 @ 15c
Umber, Raw	3½ @ 7½c
Umber, Raw, in oil	10 @ 15 @ 48c
Vermilion, Chinese	90c
Vermilion, English	45 @ 47½c
Vermilion, American, Common	15c
White Lead, American, pure dry	7c
White Lead, American, pure in oil	7¼c
White, Paris, English, prime	in bbls. 2 @ 2½c
Yellow Ochre, French	$1.75
Yellow Ochre, French, in oil	asst'd cans, 11c; kegs, 8c
Yellow Ochre, Vermont	in casks, 1½c
Yellow Chrome	17 @ 27c
Yellow Chrome, in oil	14 @ 18 @ 25c
Zinc White, American No. 1, dry	5 @ 6c
Zinc White, American No. 1, in oil	9c
Zinc White, French (Paris) dry	8 @ 10c
Zinc White, French, in oil	10 @ 11c

Oils.

Linseed, Raw, in casks and bbls	gal. 55@ 57 c
Linseed, Boiled, in casks and bbls	gal. 57 @ 60c
Bleached Whale	₱ gal. 60c
Bleached Sperm	₱ gal. $1.25
Bleached Elephant	74c
Signal	74c
Prime Lard	c
No. 1 Extra	80c
West Virginia	12c @ 15c
Drilling	40c
Miners' Oil	40c @ 45c
Fish Oil, pressed	43c @ 45c
Neatsfoot	85c
Tallow	75c @ 80c
Empire Cylinder Oil	65c
Machinery	40c
Engine	30c

Sundries.

Mineral Wool, ordinary	₱ lb 1 @ 1½c
Mineral Wool, extra	₱ lb 3 @ 3½c
Asphaltum Cuban	5c @ 8c
Asphaltum Egyptian	8½c @ 9c
Benzine	₱ gal. 8c @ 10c
Chalk	80c
Chalk, Block	75c
Dryer, Patent Am'n	asst'd cans, 90; kegs, 70
Frostings	40c
Glue, White	24 @ 35c
Glue, Sheet	20c
Glaziers' Points, Zinc	80
Gum, Copal	35c
Gum, Damar	35c
Gum Shellac, English	40c
Gum Shellac, English, dark	35c
Litharge	7½c
Pumice Stone, selected Lumps	4 @ 6c
Pumice Stone, Powdered	2½c
Pine Tar, bbls	$3.25 @ $3.50
Pitch	$2.25 @ 2.30
Putty, in bladders	3 c
Putty, in bulk	2½c
Rosin—Common and Good—Strained	$2.25
E & F	$2.55 @ $2.60
G & H	$2.80 @ $2.90
I & K	$3.10 @ $3.30
M & N	$3.80 @ $4.10
Spirits Turpentine	45c @ 45½c
Whiting Spanish	¾c
Waste, No. 1 Cop	10c
Waste, No. 1 White Machine	10c
Waste, No. 2 White Machine	9½c
Waste, No. 1 Colored	7c
Waste, No. 2 Colored	6½c
Waste, Washed Machine	9c

Glass.

Prices current per box of 50 feet.
New list, January 17, 1882.

Single Thick.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$10.00	$ 9.25	$ 9.00	$ 8.50
11 x 14 to 16 x 24	11.50	10.75	10.25	9.50
18 x 22 to 20 x 30	14.75	13.75	12.50	11.50
15 x 36 to 24 x 30	16.50	14.75	13.00	
26 x 28 to 24 x 36	17.50	16.00	14 00	
25 x 36 to 20 x 44	18.75	17.25	14.50	
26 x 46 to 30 x 50	20.50	19.25	16.50	
30 x 52 to 30 x 54	22.75	21.00	18.00	
30 x 56 to 34 x 5	24.00	22.00	19.75	
34 x 58 to 34 x 60	25.25	23.75	21.50	
36 x 60 to 40 x 6	28.50	26.00	23.75	

Double Thick.

SIZES.	1st.	2d.	3d.	4th
6 x 8 to 10 x 15	$13.00	$12.25	$11.75	$11.00
11 x 14 to 16 x 24	15.75	14.75	14.00	
18 x 22 to 20 x 30	20.00	18.50	17.00	
15 x 36 to 24 x 30	22.00	20.00	17.75	
26 x 28 to 24 x 36	24.00	22.50	19.25	
26 x 36 to 26 x 44	25.00	23.50	20.00	
26 x 46 to 30 x 50	27.00	25.25	22.00	
30 x 52 to 30 x 54	30.00	28.00	24.00	
30 x 56 to 34 x 56	31.50	29.00	26.25	
34 x 52 to 34 x 60	33.00	31.50	28.50	
36 x 60 to 40 x 60	37.00	34.00	32.00	

Sizes above—$15 per box extra for every 5 inch s. An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 82 united inches will be charged in the 82 united inches bracket.
Discount, 70 to 70 & 5 %.

DE-OXYDIZED BRONZE,

PATENTED.

Is composed of **LAKE COPPER** and best **ASIATIC TIN** in any proportion required, so as to be either as **ductile as copper, as tough as iron, or as hard as steel,** according to the proportion of Copper and Tin used.

The **process** of making the alloy is what constitutes its superiority over any other known alloy of Copper and Tin or any other Bronze composition.

The castings made from this metal, owing to its perfect fluidity when melted, possess great density, perfect soundness and homogeneity. Unlike certain bronze and other compositions, it can **be handled without the least difficulty by any ordinary founder,** as it flows like oil in pouring.

TENSILE STRENGTH OVER 90,000 POUNDS TO THE SQUARE INCH.

We claim for it

1. **UNEQUALED ENDURANCE.**
2. **SUPERIOR ANTI-FRICTION QUALITIES** to any other known Bronze or Brass.
3. **GREAT MALLEABILITY AND TENACITY.**
4. **SUSCEPTIBILITY** of the **HIGHEST FINISH** on account of its homogeneity and smoothness of surface.
5. **JOURNAL BEARINGS** made of **D. O. B.** require **ONE-FOURTH** less **LUBRICATING MATERIAL** than any other metal yet known.
6. **It is superior to all other bronze for the following purposes:**
   1. Engine, Car, and Machinery Journals.
   2. Pumps, Valves and Linings, Cylinders, Pinions, Cogs, Plungers, Crank Pins, &c.
   3. Car Trimmings, Harness and Coach Furniture, House Hardware, Steam Fittings, &c.
   4. Wire Sheets, Rods and Tubes.
   5. Bells, Gongs, Ordinance, Boilers, Fire Boxes.
   6. Tuyeres (For this Purpose it has no equal).
7. **ART METAL WORK** it finishes as handsome as Gold.
8. **CHIMES AND PEALS OF BELLS.**

We are making a specialty of Chimes and Peals of Bells from 2000 pounds the Peal up to 25,000 pounds Chime of 9 Bells, or any greater weight or number of Bells. We also furnish small and large Bells singly of all descriptions. Send for Circular.

Henry Disston & Sons, Saw, Tool, Steel and File Works, Front and Laurel Streets,

Philadelphia Smelting Company: PHILADELPHIA, October 4, 1879.

GENTLEMEN: After a trial of eighteen months of your "DE-OXYDIZED BRONZE" as Journal Boxes in our Rolling Mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used. Very truly,

HENRY DISSTON & SONS.

Office of Eagle Iron Works, 1162 North Third Street,

Philadelphia Smelting Company: PHILADELPHIA, August 29, 1879.

GENTLEMEN: In reply to yours of the 28th inst., we beg to say that we have been using your "DE-OXYDIZED BRONZE" for over a year, and have found it better than any composition boxes we have used; and as long as you continue to make it the same quality, we shall use no other metal in our Engine Boxes. We therefore take pleasure in recommending it to Engine Builders in general.

Yours respectfully, HOFF, FONTAINE & ABBOTT.

Office of Union Brass Manufacturing Company,

CHICAGO, Dec. 23, 1880.

Philadelphia Smelting Company, Limited, Twelfth and Noble Streets, Philadelphia, Pa.:

DEAR SIRS: In reply to your inquiry of yesterday as to our opinion of "DE-OXYDIZED BRONZE" for Railway Coach Trimmings, I beg to submit that we have used it up to present writing for the trimming of something over 100 coaches. One marked peculiarity of this metal, when highly finished, is non-liability to abrasion, and its non-affinity with the gases of the atmosphere, which in embossed work is a great desideratum. To those willing to pay more in the first cost, we would confidently recommend "DE-OXYDIZED BRONZE" Trimmings as cheaper in the end. Yours very truly, J. HALL DOW, President.

Cowles Hardware Co., Manufacturers of Solid Bronze Butts and Blanks, Unionville, Conn., say—"We use only 'DE-OXYDIZED BRONZE,' which is superior to any other metal known for our purposes, as it is of unequaled endurance in resisting friction and susceptible of the highest finish."

We can also refer to many large concerns, in addition to above, who are using it in preference to any other.

DE-OXYDIZED COPPER.

We are making "PURE" Sheet Copper and WIRE. Its tensile strength is double that of ordinary Copper Sheet and Wire, and it is perfect in its texture.

GENUINE BABBITT.

Our Genuine Babbitt is superior to all other makes in the market in every particular. We guarantee it to be perfect in its Anti-friction qualities in machinery AT A SPEED OF **10,000** PER MINUTE, or at **1000** TONS PRESSURE for **10** YEARS. We append below testimonials from A1 houses justifying us in the above claims.

WORCESTER, MASS., April 21, 1881.

We have used your "Genuine Babbitt" about 4 years on our wood-cutting machinery bearings, run at a speed of 9800 revolutions per minute, and always with entire satisfaction.

G. W. INGALLS & CO.

NEWARK, N. J., Dec. 19, 1881.

Gents.—We have received word from our 8-ton forging machine. The Babbitt Metal Bearings in main shaft are 8 inches diameter by 14 inches long each, and in the Caps and Crank Bearing 8 x 14 inches. The machine strikes 18,000 blows daily making wrenches. It has run steadily for 2 years, and has never had a liner taken out in any part. The crank-shaft and parts on it weigh above 4000 pounds. The shaft makes about 250 revolutions per minute. Your Genuine Babbitt, now exclusively used by us, has given us the best satisfaction. We have tried almost all other makes in search of a good article.

E. GOULD & EBERHARDT, Machinists' Tools, &c.

NEW HAVEN, CONN., April 11, 1881.

We have used your "Genuine Babbitt" in our Challenge Rock Breaker with excellent results, and are pleased to testify to its merits for Journals where high speed and great pressure are required.

BLAKE CRUSHER CO.

WORCESTER, MASS., April 23, 1881.

Having used your "Genuine Babbitt Metal" for over 4 years on machinery that runs over 9000 turns a minute, on 1 in. shaft, 3 in. journals, I can safely recommend it for all you advertise it to do. Any person wishing to see the machinery or wanting further information can call or address,

A. L. THOMPSON, Master Mechanic, 25 Hermon street.

From J. L. MARSDEN, Supt., FARRELL FOUNDRY AND MACHINE CO., ANSONIA, CONN., Aug. 17, 1880

The "Genuine Babbitt" we have bought from you gives perfect satisfaction in our Stone Breakers. We have it working in bearings 12 in. long and 5 in. diameter. One-half the revolution of shaft there is a pressure of 900 tons. The other half 2½ tons. The shaft makes from 200 to 250 turns per minute. I think this is a very severe test, yet they have been running for more than one year.

From WITHERBY, RUGG & RICHARDSON, Manufacturers of WOOD-WORKING MACHINERY, WORCESTER, MASS., NOV. 20, 1880.

Send us 1000 pounds "Genuine Babbitt," divided into Bars, as usual. We think the continuance of our trade with you for the past 8 years, in the face of the constant effort made by other parties to divert our patronage, is a sufficient recommendation of your goods. We speed some journals high as 6000. Yours truly,

WITHERBY, RUGG & RICHARDSON

From this it will be seen that it can have no superior, or even equal, as an Anti-Friction Metal in anything manufactured. We make besides all grades of Anti-Friction Metals,

Letter A, Guaranteed at a speed of 2000.
Letter B, Guaranteed at a speed of 1000.
Letter C, Guaranteed at a speed of 800.
Letter D, Used for Shafting.
Letter E, Used for Ag'l Implements, &c.
Letter A L, For slow speed.

All our Metals are made from best Lake Copper, Asiatic Tin, Cookson's Antimony and best Refined Lead, and in all cases run free at melting heat, without drossing, and without any necessity for heating the journals into which they are poured.

MANUFACTURERS' AND MACHINISTS' NAME PLATES,

REAL BRONZE FINISHED.

Patterns from $3 upwards, according to Size and Style. Sketches furnished for approval before making Patterns.

We have a specialty in this line and produce a handsomer plate, at less money, than can be obtained elsewhere.

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. COR. TWELFTH AND NOBLE STREETS, PHILADELPHIA, PA.

Steel.

R. H. WOLFF & CO.,

MANUFACTURERS OF

Steel Wire

For All Purposes.

Special Finest CAST STEEL WIRE,

MARKET STEEL WIRE, PRIME COPPERED SPRING WIRE, TEMPERED AND UNTEMPERED STEEL WIRES, IN LONG LENGTHS, FOR CRINOLINE, CORSET, LOCK AND BRUSH MAKERS, AND ALL SPECIAL PURPOSES.

ALL KINDS OF FURNITURE SPRINGS.

IMPORTERS OF

IRON STEEL, & RAILS

OF EVERY DESCRIPTION.

WIRE RODS, PLAIN AND GALVANIZED WIRES, &c.,
GUN BARRELS, MOULDS, AND ORDNANCE.

Shipments in bond from American Ports and direct from Europe to all parts of the World.

EXPORTERS AND GENERAL MERCHANTS.

WORKS, PEEKSKILL, N. Y.

Direct all communications of the

OFFICE & WAREHOUSE, 93 John St., New York.

MILLER, METCALF & PARKIN,

Pittsburgh, Pa.,

Manufacturers of

CRESCENT STEEL,

In Bars, Sheets, Cold-Rolled Strips, &c.

Polished, Compressed Drill Rods and Wire,

Warranted equal to any imported in *quality, finish and accuracy.*

Also Common Grades.

J. & RILEY CARR,

SHEFFIELD, England. *ESTABLISHED 1810.*

Sole Importers and Manufacturers of the

Superior Quality. **Celebrated "Dog Brand"** Full Weight.

FILES AND RASPS.

EVERY FILE

WARRANTED "HAND CUT"

And made from our own CAST STEEL, specially manufactured for the purpose. A large and well-assorted stock on hand or promptly imported to order. Also

SUPERIOR STEEL

for Lathe Tools, Granite Rock Drills, Chisels, Masons' and Miners' Tools, Files, Cutlery and Edge Tools.

SHEET CAST STEEL, for Cotton Ginsaws, Knife, Lock and other Springs, Saws, Cutlery, Machine Knives, Stamping Coid, &c.

BRIGHT COLD ROLLED STEEL, for Clock, Lock, Corset and other Springs, Keys, Stamping Cold, &c.

SWEDES SPRING, German, Machinery purposes. and all other descriptions for agricultural and machinist

PATENT SOLID WROUGHT IRON ANVILS.

Warehouse, 30 Cold St. (near John St.), NEW YORK.

S. & C. WARDLOW,

Sheffield, England,

Manufacturers of the Celebrated

Cast and Double Shear

STEEL.

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table Knives, Mining Tools, Dies, Files, Clock and other Springs, and Tools of every variety.

Warehouse, 95 John Street, New York.

WILLIAM BROWN, Representative.

Cleveland Rolling Mill Co.,

Manufacturers of

BESSEMER STEEL

AND

Iron Rail and Fastenings,

SPRING STEEL

AND

WIRE OF ALL KINDS,

Tire, Axles and other Forgings,

Boiler Plate, Galvanized and Black Sheet Iron, Corrugated Roofing and Siding of Siemens-Martin, Bessemer Steel and Iron.

CLEVELAND, OHIO.

Western Agency,
91 Lake Street, Chicago.
N. D. PRATT, Agent.

New England Agency,
239 Franklin Street, Boston.
JOHN WALES & CO., Agents.

THE MIDVALE STEEL CO.,

NICETOWN, PHILADELPHIA.

Best Warranted Cast Steel for Machinists' Tools,

Taps, Dies, Punches, Shear Blades, Chipping Chisels and Granite Rock Drills,

Extra Mild Center Steel, special for Taps;

ALSO,

MACHINERY AND CAST SPRING STEEL HEAVY AND LIGHT FORGINGS.

Warehouse, No. 12 North 5th St., Philadelphia.

Address *A. M. F. Watson*, General Sales Agent.

STEEL Gautier Steel.

See Page 3.

Steel.

NEWARK STEEL WORKS.

BENJAMIN ATHA & CO.,

Manufacturers

BEST REFINED CAST STEEL

And grades of Steel specially adapted for Lathe Tools, Chisels and Taps and Dies.

Warranted most superior for TOOLS AND GRANITE ROCK DRILLS

A full assortment of this universally approved OLD BRAND and other Steels for sale by

EDWARD FRITH & SON, Agents,

8 Burling Slip, New York.

LABELLE STEEL WORKS.

SMITH, SUTTON & CO.,

MANUFACTURERS OF ALL KINDS OF

STEEL.

Also Springs, Axles, Rake Teeth, &c.

OFFICE & WORKS, Ridge, Lighthill & Belmont Sts., & Ohio River, Allegheny,

Post Office Address, Pittsburgh, Pa.

Represented at Boston by WETHERELL BROS., 31 Oliver St.; at Philadelphia by JAMES C. HAND & CO. 614 and 616 Market St.; at Cleveland by CONDIT, WICK & CO., 153 Water St.

ALBANY & RENSSELAER IRON & STEEL CO.,

Troy, N. Y.,

Office in New York City, 56 Broadway,

MANUFACTURERS OF

BESSEMER STEEL RAILS,

Machinery Steel, Merchant and Ship Iron.

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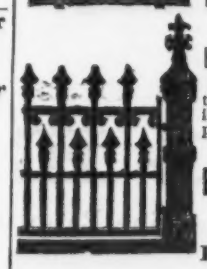

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Bell Metal Kettles.

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KEYSTONE SAW, TOOL, STEEL & FILE WORKS,

Front and Laurel Streets, PHILADELPHIA.

DISSTON'S SAMSON TREE PLANTER AND POST HOLE DIGGER.

Fig. 1.

Patented May 29, 1870.

Price, - - - $37.50 per dozen.

No Farmer, Nurseryman, Railroad or Telegraph Company SHOULD BE WITHOUT ONE.

NO BACK-ACHE.

NO KNEE-WORK.

NO CLOGGING.

This tool has been thoroughly tested, and has given the greatest satisfaction to all who have tried it. The principle on which it works makes it self-cleaning and prevents adhesion in sticky soil; therefore it always works free and easy. It is far superior to all plungers, augers and boring machines, as it works well in stony, sandy, or clay soils; quicksand under water is as easily removed as though no water existed.

Fig. 2.

DIRECTIONS.

Plunge the Digger into the ground, as shown in cut, Fig. 1, and when the soil is loosened pull out the lever with one hand, as shown in cut, Fig. 2, which will press the dirt between the blades; then draw the Digger from the hole, keeping hold of the lever with one hand and the handle with the other. When the Digger is clear of the hole, you can deposit the load anywhere within reach by simply pressing down the lever, which will open the blades and the dirt will fall from between them. The Digger is then ready for another plunge. The steel blades are nine inches long, and the whole tool five feet long. *For sale at Hardware and Agricultural Stores.*

HENRY DISSTON & SONS.

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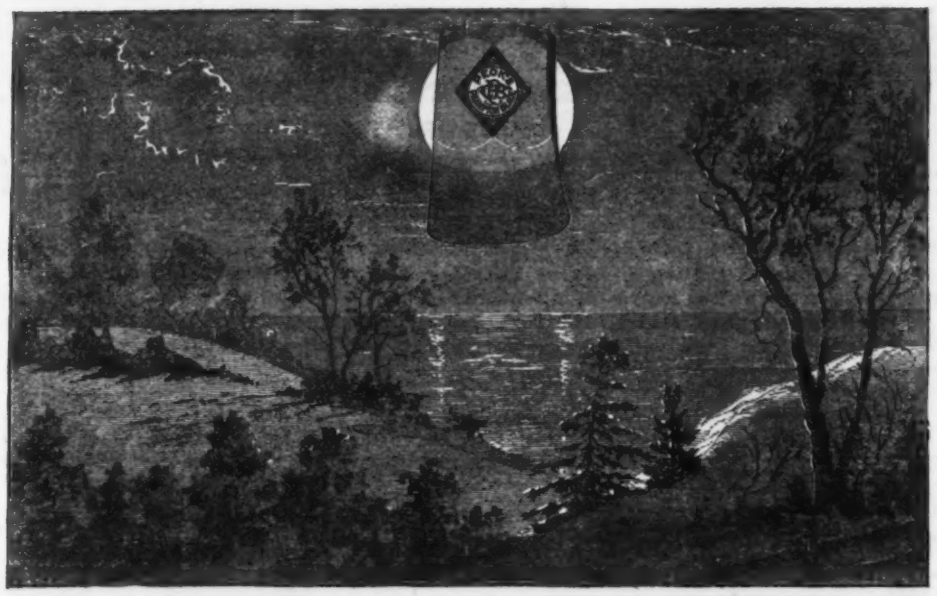
No. 81 Murray Street, NEW YORK.

Agents for A. G. PECK & CO., Cohoes, N. Y.



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Tinned Belt Rivets AND Burrs a Specialty.

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Bucket for Chain Pumps.

It has no valves to become obstructed and no screw joints to become immovable by rust.

Advantages of the Crosby Bucket over all others:—1. It has an air chamber on top, which conducts the air to the bottom of the well. 2. It is self expansive, the base of the bucket being ⅛ of an inch larger at the bottom than bore in the tubes, which allows it to expand, and the groove in the side to contract. 3. The wear comes on the whole side, and not on the extreme edge like other buckets. 4. It contains more solid rubber than three of any other manufacture.

Three sizes—1¼ inch for deep wells, 1¼ inch for 40 feet or less, 2 inch for stock pumps.

No charge for Territorial Rights.

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Send for Price List. Agents wanted in every county. Address A. D. Crosby, Patentee and General Agent, Cuba, Allegany county, N. Y. For Sale by W. & B. Douglas, 84 and 87 John St., N. Y., and all General Hardware and Pump Dealers.

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Agent for the Florence Tack Co.,

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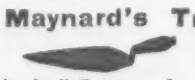

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DRILLS FOR COES, WORCESTER, HUNTER AND OTHER HAND DRILL PRESSES. BEACH'S PATENT SELF-CENTERING CHUCKS, CENTER AND ADJUSTABLE DRILL CHUCKS, SOLID AND SHELL REAMERS. DRILL GRINDING MACHINES. TAPER REAMERS, MILLING CUTTERS AND SPECIAL TOOLS TO ORDER.

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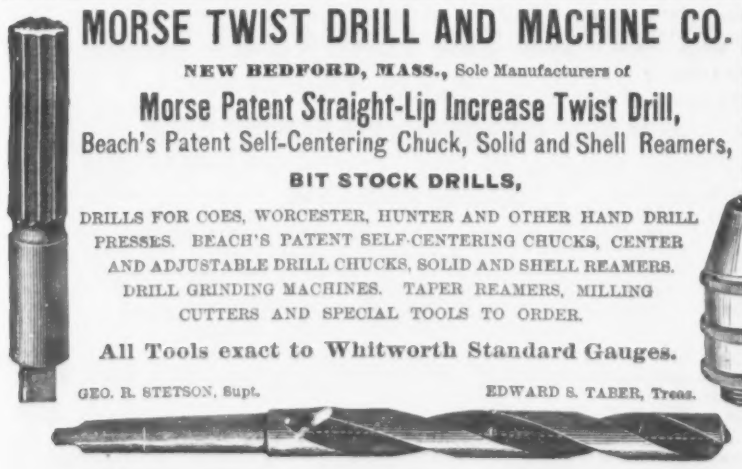

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It will throw a continuous jet FROM FORTY TO SIXTY FEET. A new pattern jet and spray nozzle is sent with each pump.

Especial attention is called to the material and workmanship exhibited in these pumps.

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High grades of steel used, and great success in manipulating and tempering it. Orders for Special Plows solicited. Agents wanted everywhere.

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FOR PIPE AND BOLTS.

Tapped to the U. S. and Whitworth Standard Gauges. *Adjustable* to all variations in the size of fittings. Can be *resharpened without drawing the temper* by simply grinding them. Possessing practical advantages appreciated by all mechanics. Circular and Price List sent free on application.

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HAND FREEZER. 2 to 25 qts. $4.50 to $25.00.

HAND OR POWER. 25 and 40 qts. $75.00 and $175.00.

HAND OR POWER ICE CRUSHER. $75.00.

White Mountain Freezer Co., Nashua, N. H., U. S. A.

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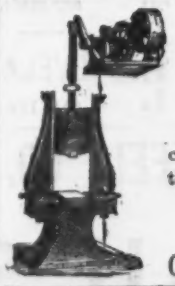
Successors to Milo Peck, Manufacturers of



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PECK'S DROP LIFTER is the only one which has its parts cushioned. Being thus cushioned they are the most durable Lifter in the market.

Can be attached to any drop now in use.

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EXCELSIOR METAL POLISH, QUARTZ, PUMICE AND ROTTEN STONE, CROCUS, ROUGE, GLUE SAND PAPER, EMERY PAPER AND CLOTH, EMERY WHEELS & C. & C.

WALPOLE EMERY MILLS,

MILLS, So. WALPOLE ⁘ 114 MILK ST. BOSTON, MASS.

THE MOUNT CARMEL" OX SHOE.

Five Sizes.

Steel Toe Calk.

FINISHED READY FOR NAILING ON.

WARRANTED

The Best and Cheapest Shoe Made.

IVES, WOODRUFF & CO.

Manufacturers,

MOUNT CARMEL, CONN.

For sale by dealers in blacksmiths' supplies.

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Manufacturers of

FINE GRAY IRON CASTINGS OF EVERY DESCRIPTION.

Rosettes and Pickets for Wire Workers, Castings for Furniture and Piano Manufacturers. Iron and Metal Patterns of all kinds a specialty.

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Anvils.
Peter Wrights, ⅌ ℔ ... 10½c
Over 200 lbs ... 11c
Trenton ... 10½

Apple Parers.
Globe Apple Pearers ... $6 00 net
Penn Apple Parers ... $6.00 net
Lots of 10 to 25 dozen special prices.
Bay State Peach Parer ... $9.00

Axes.
Hunt's Kentucky and Yankee, per doz $10.00 @ 10.50
Robert Mann ... $9.00 @ $9.25
Richland Chief ... " $8.50 @ 8.75
Beveled Axes ... add 50c " net
Double Bit Axes ... net $19.00 @ 20.00

Augers and Auger Bits.—New List January 7, 1880.
Bates' Nut Augers ... dis 40&10 %
Cook's Augers ... dis 40&10 %
Watrous' Ship Augers ... dis 15 %
Benjamin Pierce Auger Bits ... dis 40 %
Griswold Auger Bits ... dis 40&10 %
Cook's " ... dis 40&10 %
Jennings' " ... dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ⅌ doz. dis 25&10 %
Stearns' Pat. Hol. Augers, list $48 ⅌ doz ... dis 25&10

Balances.
Light and Common ... dis 15&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ... dis 65&10 %
Swiss Pattern Hand Bells ... low list dis 40&10 %
Connell's Door Bells ... dis 10 %
Gt. Western & Kentucky Cow, new list ... dis 50 %

Boring Machines.
Upright, without Augers ... List 5.50 } dis 45 %
Angular, without Augers ... " 6.75 }

Bolts.—Eastern Carriage Bolts ... dis 80 %
Philadelphia " ... new list dis 70&10 %
Stanley, Wrought Shutter ... dis 50&10 %

Braces.—Barber's ... dis 40&5 %
Backus ... dis 40 %
Spofford ... dis 50&5 %
American Ball ... dis 55 %

Butts.—Cast Fast Joint, Narrow ... dis 40&10 %
" " Broad ... dis 40&10 %
Cast Loose Joint, Narrow ... dis 40&10 %
" " Broad ... dis 40&10 %
" Acorn, Loose Pin ... dis 45&10 %
" " Jap'd ... dis 55&10 %
" Mayer's Loose Joint ... dis 55&10 %
Wrought Loose Pin ... dis 5&10 %
" Table Hinges and Back Flaps ... dis 40&10 %
" Narrow, Fast ... dis 40&10 %
" Loose Joint ... dis 45&10 %

Blind Butts.
Parker ... dis 70&2 %
Clark ... dis 70&2 %
Shepard ... dis 70&2 %
Lull & Porter ... dis 66⅔&10 %
Huffer's ... dis 50 %

Chains.—German Halter and Coil, list December 31, 1881 ... dis 35&10 %
Galvanized Pump ... ⅌ ℔ 9½c net
Best Proof Coil Chain—English.
⅌ ℔ ... 13 10 8½ 7¼ 7⅛ 7 gold
9-16 ¼ 5-16 ⅜ 7-16 ½ in.

Chisels.—Socket Framing ... dis 65&10 %
Socket Firmer ... dis 65&10 %
Butcher's ... $5.00 to $ gold

Casters.—Bed (new list July 1, 1880,) ... dis 35&10 %
Plate ... dis 35&10 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880 ... dis 45 %
Enterprise ... dis 25 %

Cutlery.—Walden Pocket ... new list net
Penna. Knife Co ... new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ... dis 65&10 %
Adjustable Handle ... dis 20 %

Fry Pans.
Tinned ... dis 45 %
⅌ doz. $3.00 4.00 4.50 5.00 5.50 6.50 7.50 9.00 10.00
No. 0 1 2 3 4 5 6 8
Burnished ... dis 60 %
⅌ doz. $3.00 3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
No. 0 1 2 3 4 5 6 7 8

Files.
Nicholson ... dis 40 %
Disston ... dis 40 %
Butcher ... $4.50

Fluting Machines.
Eagle—3½ in. roll ... each, $2.15 } dis 25 %
—5½ in. roll ... " 2.85 }
Crown—4½ in. roll ... " 3.50 }
" —6 in. roll ... " 4.00 } dis 25 %
" —8 in. roll ... " 6.50 }
Geneva Fluter ... dis 25 %
Favorite com. Fluter & Sad Iron ... ⅌ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ... dis 30 %
Maydole Hammers ... dis 15 %
Howell A. E. Nail Hammers ... per doz. net $3.75

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Disston Loop Handles Crosscut ... 35c pair net
Boynton Loop Handles Crosscut ... 35c pair net

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Yerkes & Plumb, new list ... dis 30 %
Hunt ... dis 25 %

Hinges.
Strap and T ... dis 40&10&10 %

Horse Nails. Nos. 5 6 7 8 9 10
Ausable ... 30 27 25 24 23 22
" Pol'ed & Pt'd and Blued and Pointed. 31 28 ... 25 24 23
Globe ... New list. 31 28 26 25 24 23
Clinton ... 23 21 20 19 18
" Polished & Pointed ... 24 22 21 20 19
Blacksmith Favorite, all sizes ... 12c lb
Discount on Ausable, 20&10 %; Clinton, 20&10 %; Globe, 20%

Hay and Straw Knives.
Lightning ... per doz, net $18.00
Electric ... " " 18.00
Wadsworth ... " " 10.50
Walton Straw Knives ... " " 17.00

Locks and Knobs.
Branford ... new list dis 45&2 %
Gaylord Cabinet ... dis 25&2 % cash
American Padlocks ... dis 35 &2 % cash
Scandinavian Padlocks ... dis 50 %
⅌ doz. $5.00 5.50 6.50 7.50 8.50 10.00 12.50 } dis 60 %
No. 57 58 59 60 ... 62 63
⅌ doz. $18.00 26.00 33.00 } dis 60 %
No. 64 65 66

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Buckeye ... Large list net; small list net
Tubular ... No. 0, $8.65; No. 1, $10.15 ⅌ doz net
Globes, 35 cents extra per doz. net.

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Philadelphia } new list
Excelsior } dis 30 %

Lawn and Garden Pumps.
Roland Patent ... List $5.00 dis 10 %

Mattocks.
Long and Short Cutter ... new list ... 30
Pennsylvania Pattern ... dis 30

Molasses Gates.
Enterprise Mfg. Co's Measuring Faucets ... dis 25 %
Stebbins' Gates ... dis 70&10%
Lincoln's ... dis 60&10 %
Landers, Frary & Clark's Petroleum ... dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1880 ... dis 40 %
Cork Lined " ... dis 70 %

Meat Cutters.
Dixon's ... dis 50 %
Woodruff ... dis 50 %
Stowe ... dis 30 %
Hale's ... new list, dis 50, 10&5 cash
American ... dis 25 %
Stuffers ... dis 30 %
Enterprise Stuffers ... dis 25 %

Planes.—Sandusky Tool Co ... dis 20 %
Ogontz ... dis 25 %
Ohio & Auburn ... dis 20 %
Bailey (S. R. & L. Co.) ... dis 20&10 %

Plane Irons.—Ohio Tool Co ... dis, 20 %
Butcher's ... $5.00

Plumbs and Levels.
Stanley's Adjustable ... dis 65&10 %
" Non-Adjustable ... dis 65&10 %

Picks.—New list ... 30 %

Razor Strops.
Lamont Combination ... per doz. $4.00
" " ... 1 gross lots $42.00
Imitation Emerson ... per doz. 2.00

Rules.—Stanley Boxwood ... dis 66⅔ &10 %
Stanley Ivory ... dis 55&10 %

Steelyards.—Hart's Pattern ... dis 30&10 %
⅌ doz ... $14.50 17.75 21 00 26.50 31 00 35.50
Lbs ... 50 100 150 200 250 300
American Pattern ... dis 30&10 %
⅌ doz ... $8.00 10.25 13.75 15.60 16.75 19.50
Lbs ... 50 100 150 200 250 300

Squares.
Steel and Iron ... dis 50 %; full case, dis 50&10 %
Try squares, Stanley ... dis 50&10 %
Disston's Try Squares ... dis 40 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ... ⅌ doz $9.00 }
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Oliver Ames & Sons, new list ... dis 15 %
Griffiths ... dis 50@50&5
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Sad Irons.—4 to 10 lbs ... ⅌ ℔ 3⅜c
Mrs. Potts' Patent ... dis 35 %

Stone.
Washita Extra ... ⅌ ℔ 28c net
" No 1 ... " 20c
" No. 2 ... " 16c
" Slips ... " 45c
" Axe ... " 13c net
Hindostan Oil Stone No. 1 ... ⅌ ℔ 6c }
" Axe Stone ... " 8c } dis 33⅓
" Slips ... [illegible] }

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Flat Head Iron ... dis 30 %
" Brass ... dis 30 %
Round Head Brass ... dis 20 %
" Iron ... dis 25 %

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Plated ... dis 40&5 %
German Silver ... dis 30 & 10 %
Britannia, Boardman's ... dis 60 %
" Parker's ... dis 60 %
Tinned ... dis 10 %

Springs.—Torrey ... dis 40&10 %
Gem No. 3 small Jap'd ... $2.00 } dis 40 %
" No. 2 medium Jap'd ... 2.75 }
Coil No. 10, per gross net ... $10.00
Warner Door Springs, per doz. net ... 1.75
Standard Spring Hinges—
Single No. 0, per doz. net ... 1.50
" No. 1, " " ... 1.60

Stocks and Dies ... dis 10&5 %

Stove Polish.—Gem ... ⅌ gross, $4.50, dis 5 %
Dixon ... " 6.00, dis 10%
Fire Fly ... $3.00 gross net

Tacks ... dis 25&10 %
Shoe Nails—4-8, 5⅛c.; 3½-8, 7c ⅌ ℔ ... 10 %
Double Pointed Tacks ... dis 40&5 %

Traps.
Genuine Oneida—Newhouse ... dis 30 %
Im. Oneida—Newhouse list, first qual ... dis 55&5 %

Vises.—Solid Box, Trenton new list ... dis 35 %

Wrenches.—Agricultural ... dis 60&10 %
Coes' Genuine ... dis 40&10 %
" " Mechanics' ... dis 40&10&10 %
" " Mall. Bar ... dis 75 %

Wire.
Bright or Ann'd, No. 0 to 18 ... dis 50 to 52½ %
" " No 19 to 26 ... dis 57½ to 60 %
" " No. 27 to 36 ... dis 62½ to 65 %
Coppered, 0 to 18 ... dis 45 to 50 %
Tinned Broom Wire ... dis 52½ to 55 %
Galvanized Barb Wire ... 9¼
Painted Barb Wire ... 8¾
Galvanized No. 7 to 18 ... Market List, dis 42½ to 45 %

Wringers.
Peerless No. 2½ ... $40.00
" " 2 ... 42.00
Universal, No. 2½ ... 42.00
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PITTSBURGH.

Merchant Iron.

Terms.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

For fluctuations and discounts on card rates see weekly Pittsburgh Trade Report.

The following are card rates.

Flat Bar.
1¼ to 4 by ⅜ to 1 inch ... 2.5c
4½ to 6 by ⅜ to 1 " ... 2.6c
1¼ to 6 by 1⅛ to 1¼ " ... 2.9c
1¼ and 1⅛ by ⅜ to ⅝ " ... 2.6c
1 and 1⅛ by ⅜ to ⅝ " ... 2.7c
⅝, ¾ and ⅞ by ⅜ to ⅝ inch ... 2.9c

Rounds and Squares.

1 to 1⅞	2.5c	⅝ to 9-16	2.7c
2 to 2⅜	2.7c	½ to 7-16	2.9c
2½ to 3¼	3.0c	⅜	3.1c
3⅜ to 4	3.5c	5-16	3.3c
4¼ to 5	4.0c	¼	3.4c
⅝ to ⅞	2.6c	3-16	5.5c

Oval Iron.

⅞ to 1⅜	2.9c	¾	3.3c
⅝ to ⅝	3.1c	½	3.7c

Half Oval and Half Round.

⅞ to 1¼ inch	3.2c	½ inch	4.0c
⅝ to ⅝ "	3.7c	⅜ "	5.5c

Horse Shoe.
⅝ to 1⅛ by 5-16 to ⅝ inch ... 3.6c

Wagon Box Iron.
⅝ Inch, Nos. 13 and 14 ... 3.7c
" " 11 and 12 ... 3.5c
" " 13 and 14 ... 4.0c
" " 11 and 12 ... 3.8c
" " 13 and 14 ... 4.4c
" " 11 and 12 ... 4.1c

Heavy Bands.
3½ to 6 by ¼ and 5-16 inch ... 2.7c
1½ to 3¼ by ¼ and 5-16 " ... 2.7c
1 to 1⅜ by ¼ and 5-16 " ... 2.8c
¾ to ⅞ by ¼ and 5-16 " ... 3.0c
⅝ and ⅝ by ¼ and 5-16 ... 3.5c

Light Bands.
1¼ to 6 by ⅛ to 3-16 ... 3.0c
1¼ to 6 by Nos. 11 and 12 ... 3.1c
1 to 1⅜ by ⅛ to 3-16 ... 3.1c
1 to 1⅜ by Nos. 11 and 12 ... 3.2c
⅞ and 13-16 by ⅛ to 3-16 ... 3.4c
⅞ and 13-16 by Nos. 11 and 12 ... 3.5c
¾ and 11-16 by ⅛ to 3-16 ... 3.7c
¾ and 11-16 by Nos. 11 and 12 ... 3.8c
⅝ and 9-16 by ⅛ to 3-16 ... 3.9c
⅝ and 9-16 by Nos. 11 and 12 ... 4.0c
½ inch by ⅛ and 3-16 ... 4.3c
½ inch by Nos. 11 and 12 ... 4.4c

Hoop Iron.
1¼ to 4, Nos. 13, 14 and 15 ... 3.3c
1¼ to 2, Nos. 16, 17 and 18 ... 3.4c
1¼ to 2, No. 19 ... 3.5c
1¼ to 2, No. 20 ... 3.6c
1¼ to 2, No. 21 ... 3.7c
1¼ to 2, No. 22 ... 3.8c
15-16, 1, and 1⅛, Nos. 13, 14 and 15 ... 3.5c
15-16, 1, and 1⅛, Nos. 16, 17 and 18 ... 3.6c
15-16, 1, and 1⅛, Nos. 19 and 20 ... 3.7c
15-16, 1, and 1⅛, No. 21 ... 3.8c
15-16, 1, and 1⅛, No. 22 ... 3.9c
⅞, Nos. 13, 14 and 15 ... 3.6c
⅞, Nos. 16, 17 and 18 ... 3.7c
⅞, Nos. 19 and 20 ... 3.9c
⅞, No. 21 ... 4.0c
⅞, No. 22 ... 4.0c
13-16, Nos. 13, 14 and 15 ... 3.9c
13-16, Nos. 16, 17 and 18 ... 4.0c
13-16, Nos. 19 and 20 ... 4.1c
13-16, No. 21 ... 4.2c
13-16, No. 22 ... 4.3c
¾, Nos. 13, 14 and 15 ... 4.0c
¾, Nos. 16, 17 and 18 ... 4.1c
¾, Nos. 19 and 20 ... 4.2c
¾, No. 21 ... 4.3c
¾, No. 22 ... 4.4c
11-16, Nos. 13, 14 and 15 ... 4.2c
11-16, Nos. 16, 17 and 18 ... 4.3c
11-16, Nos. 19 and 20 ... 4.4c
11-16, No. 21 ... 4.5c
11-16, No. 22 ... 4.6c
⅝, Nos. 13, 14 and 15 ... 4.4c
⅝, Nos. 16, 17 and 18 ... 4.5c
⅝, Nos. 19 and 20 ... 4.6c
⅝, No. 21 ... 4.7c
⅝, No. 22 ... 4.8c
⅝, No. 23 ... 4.9c
9-16, Nos. 13, 14 and 15 ... 4.6c
9-16, Nos. 16, 17 and 18 ... 4.7c
9-16, Nos. 19 and 20 ... 4.8c
9-16, No. 21 ... 4.9c
9-16, No. 22 ... 5.0c
9-16, No. 23 ... 5.1c
½ inch, Nos. 13, 14 and 15 ... 4.8c
" Nos. 16, 17 and 18 ... 4.9c
" Nos. 19 and 20 ... 5.1c
" No. 21 ... 5.2c
" No. 22 ... 5.3c
" No. 23 ... 5.4c

The prices under Hoop Iron do not apply to Cotton Ties.
1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.
1-10c per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.
1¼ to 2 in., cut to length.
9 to 11 lbs, per set of 6 hoops ... 3.5c
8 lbs. and less than 9 lbs. per set of 6 hoops ... 3.6c
Less than lbs. per set of 6 hoops ... 3.8c

Extras for Cutting to Length all Preceding Iron.
All Iron, including Tire ... 1.10c

Tank Iron.
No. 9 and heavier ... 3.3c
Plow Slabs ... 3.5c
" Wings ... 3.8c

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.6c	5.0c	6.5c
No. 15 to 17	3.8c	5.2c	6.8c
No. 18 to 21	4.1c	5.6c	7.1c
No. 22 to 24	4.3c	5.8c	7.3c
No. 25 & 26	4.5c	6.0c	7.5c
No. 27	4.7c	6.3c	7.7c
No. 28	5.1c	6.6c	8.1c

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.
1st quality (A) ... 10½c | 2d quality (B) ... 9½c

Galvanized C. H. B.—(Charcoal Hammered Blooms.)

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Current discount, 35 % @ 37½ %.

Coal Screen Iron.
1⅛ by ⅜ by 5-16 ... 3.0c | 1 by ⅜ by 5-16 ... 3.5c

Angle Iron.
2½, 3, 3½ and inch ... 3.3c
1½, 1¾, 2 and 2¼ inch ... 3.3c
1¼ inch ... 3.4c
1 " ... 3.6c
1¼ by 1 inch, for Plow Handles ... 3.8c
1⅛ by ¾ " " " ... 3.8c
1⅛ by ⅝ " " " ... 3.9c

T Rail.

8 lbs. to the yard	2.9c	20 lbs. to the yard	2.8c
12 " "	2.8c	28 " "	2.8c
16 " "	2.8c	40 " "	2.8c

Splice Joints for 12, 16 and 20-lb. Rail, 40c each; 28 and 30 lb. Rail, 50c each; 40 lb., 60c each.
3½ by ⅜ and ½ Spikes for 20 and 28-lb. Rail ... 4⅛c
2½ and 3 by ⅜ " " 12 and 16-lb. " ... 4½c
2¼ by 5-16 " " 8-lb. Rail ... 5½c

Flat Rails.—Punched and Countersunk.
1¼ to 2 by ⅛ to ⅜ inch ... 3.0c
1¼ by ⅜ and 7-16 inch ... 3.2c
1½ by ⅜, 7-16 and ½ inch ... 3.4c

Juniata Nail Rods ... 6.4c
Norway " ... 8.0c
Guard Iron, ... 4.0c
" ... 4.3c
Drag Bars ...
Dropper Bars ...
Cylinder and Landside Iron ...
Plow Beam Iron ...

Nails.
See Pittsburgh Trade Report.

Best Quality Refined Cast Steel.
Square, Flat, Octagon and Round.
⅜ to 2 inches, inclusive ... 12c
5-16 and 2⅛ to 3 inches ... 13c
¼ and 3⅛ to 4 " ... 14c
7-32 and 4⅛ to 5 " ... 15c
3-16 and 5⅛ to 6 " ... 18c
5-32 inch ... 22c
⅛ inch ... 30c
Oil Well Steel Forgings ... 20c

Machinery Steel.

	Crucible.	Bessemer & Open Hearth
Ordinary Sizes, ⅜ to 2 inch Round	7½c	5c
5-16 and 2⅛ to 3 inches	8½c	6c
¼ and 3⅛ to 6 "	9½c	7c
7-32 inch	10½c	8c
3-16 "	12½c	10c

Square, Flat and Octagon, ½c extra throughout the list.
Cut to specified lengths, ½c extra.

Hammer Cast Steel.
Crucible Cast Steel ... 8½c
Open Hearth Cast Steel ... 7c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth
To 21 gauge	12½c	11c	9c	7c

1c. extra for each additional gauge.
Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.
Auger and Auger Bit ... 7c
Axle Steel for carriages and wagons ... 8½c
Frog Points and Plates ... 10c
" Side Bars ... 8½c
Pick, plain (hammered) ... 10c
" and Mattock, beveled (rolled) ... 8½c
Skate Steel ... 9c
Table Cutlery, plain ... 7½c
Table Cutlery, beveled ... 8½c
Pike and Cant Hook ... 8½c
Coal and Granite Wedge ... 8½c
Roller ... 8½c
Spindle, subject to Machinery classification ... 8½c
Trap Spring Steel ... 10c
Forged Crank Pins and Lathe Spindles ... 11c
Piston Rods, plain ... 8½c
" forged to shapes ... 11c
Slide Bars, plain ... 8½c
" forged to shapes ... 11c

Crucible, Open Hearth or Bessemer.
Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick ... 6½c
Boiler, Fire-Box and Flue Sheets, not less than ⅛ thick ... 7c
Circulars and semi-circulars, when ordered separately ... 8c
Smoke Stack, to shape ... 8c
Locomotive Tank Steel ... 7c

File Cast Steel.
Square, Round, Half Round and Flat Bastard, 8-inch and over ... 8c
Mill Saw, 8-inch and over ... 8½c
Taper, 3½-inch and over ... 9½c
Horse and Shoe Rasp ... 8½c

Spring Cast Steel ... 6½c
Spiral and Taper, cut to lengths ... 7c

Tire Cast Steel.
1x¼ and over ... 8½c
1x3-16, ¾x3-16 and ⅛ ... 9c
1 and 11-16x⅛ and 5-32, ⅝x3-16 and 5-32 ... 9½c
¾ and ⅝x⅛ and 3-32 and 12 g ...
Solid Safe Cast Steel ... 10c
Three and Five Ply Cast Steel ... 7½c

Agricultural Implement Cast Steel.
Fork and Rake, Crucible ... 8c
Horse Rake Steel, cut to lengths, Crucible ... 8½c
Hoe, Crucible ... 7½c
Corn Stalk Cutter, beveled ... 9½c
Beveled Hoe and Shovel Steel in Bars ... 8½c
Crucible Plow Steel in slabs ... 7½c

Bessemer and Open Hearth.
Spring ... 4½c
" spiral and taper, cut to lengths ... 5½c
Tire, 3-16 thick and above ... 4½c
Toe Calk ... 4½c
Plow ... 4½c
Axle Billets ... 4½c
Sleigh shoe ... 4c
Cutter Shoe, cut to lengths and tapered ... 5½c
Scythe Back Steel ... 4c
Grain Drill Bars ... 7½c
" Points ... 8½c
Rolling Coulter Blanks, cut and punched ... 9½c
Thresher Steel ... 4½c
" Teeth ... 4½c
Rolled Hammer Billets ... 5½c
Terms.—Four months; 2 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.
Furnace Floor and Straightening Plates ... 3⅛c
Housings and Castings not otherwise specified ... 3½c
Guide Plates ... 3½c
Spindles and coupling boxes ... 3½c
Sand Rolls and Pinions, large size ... 3½c
" small size ... 4 c
Pipe Mill Castings ... 4 c
Rolling Mill Castings under 50 lbs ... 5
Spur and Bevel Wheels, large ... 4 c
" " small ... 4 c
Pulleys up to 30 inches ... 4½c
" over 30 inches ... 4½c
Engine Castings, light ... 4 c
" " heavy ... 4 c

Chilled Rolls.
6 to 7 in. diam., 7 to 20 in. long ... 6c
8 to 15 in. " 8 to 40 in. " ... 5c
24 to 24 in. " 15 to 72 in. " ... 4½c
14 to 32 in. " 72 to 108 in. " ... 4½c
After Oct. 1, 1881, no discounts will be made at settlement as heretofore, prices quoted being net.

White and Red Lead.
Strictly Pure White Lead in Oil, in kegs, 7c.; in 25 ℔ Tin Pails, ½c. ⅌ ℔ over keg price; 12½ ℔ Tin Pails, 1c ⅌ ℔ over keg price; assorted, 1 to 5 ℔ cans, 3c. per ℔ over keg price.
Dry White Lead in barrels ... 6¾c
Red Lead, very brilliant, in kegs, 7c; in barrels 6¾c
Litharge (Potter's Lead) " 7c; 6¾c
Freights equalized with all points where White Lead is made.
Terms: Note at sixty days, or if paid within 15 days from date of invoice a discount of 2½ per cent. will be allowed, but not otherwise.

Window Glass.
Per Box of 50 Feet.—Discount, in small lots, 60&10 % on single strength, 60 & 20 % on double; in car loads, 60&5 % on single strength, 70&5 % on double.

Single Strength.

Size.	AA.	A.	B.	C.
6 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.00
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	
Double Strength.				
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
16 x 36 to 20 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 50 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

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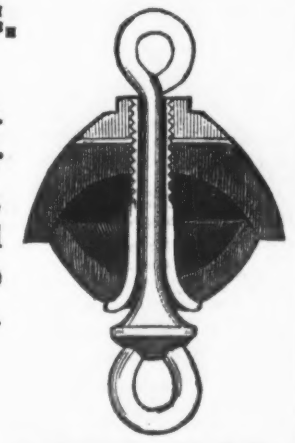
FOR CHAIN PUMPS.

The only Perfect Expanding, Self-Draining Valve Bucket made. Our Patents cover the use of the Rubber, Nut and Bolt for Expanding, Tube and Valve for Draining. Order only the Rumsey Bucket, and avoid infringing.



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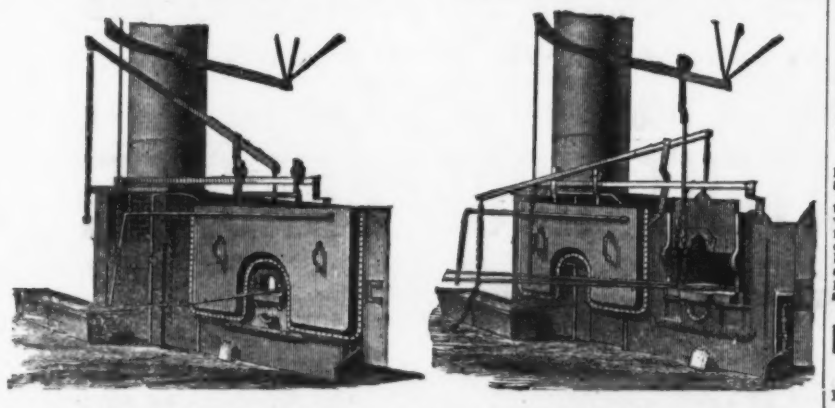

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MANAGER SLIGO ROLLING MILLS,

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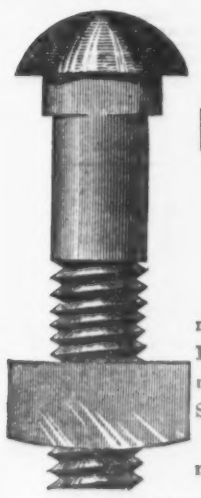

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For oiling valves and cylinders of steam engines by the only perfect method,

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The oil passes *in sight*, drop by drop, into the column of steam where it vaporizes, thus becoming a *steam lubricant*, oiling perfectly every part reached by the steam.

Any *clean oil*, black or white, light or heavy, may be used. Saves from 50 to 90 per cent. in oil and wear of machinery, thus paying for itself several times a year.

A cup will be sent to responsible parties on twenty days' trial, if desired. In ordering give diameter of cylinder

NOTICE.—The first Lubricators ever made, showing the oil passing drop by drop through a transparent water chamber, were devised by us, and the same are fully embraced by many Letters Patent owned and controlled by us. Lubricators of every nature embodying the above feature, made by other parties, are encroachments upon our rights, and we will hold purchasers and users, as well as manufacturers, responsible in damages for such violations.

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For Boiler Feeding.

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Indispensable for Engines of all kinds.

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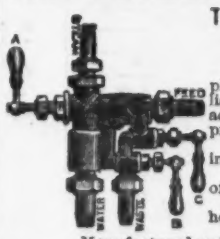

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Less liable to get out of order than a pump.

Always delivers water hot to the boiler.

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New Upright Power Drill Presses, No. 3; swing 21 inches, back geared, quick return motion; large steel Spindle, balanced in column; revolving Arm and Table; cut Gears; Pulleys, 10 x 2¼; a strong brace extends from base to column, stiffening it at point of greatest strain.—a new feaure. Weight, 1100 lbs.; hight, 6 feet. Price, $210. Small size, swing 13 in., lever feed, three speeds; tight and loose pulleys (no countershaft required). Price, $35.

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Lock and support upper and lower sashes—all sizes. Are very convenient, simple and durable. Sample to the Trade free.

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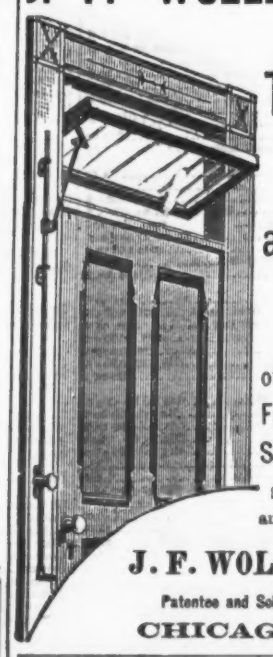

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Reported by Macomber, Bigelow & Douse.

Anvils.—"Eagle American" ₱ ℔ 9½c dis 20 %

Anvil & Vice.—
No. 1, $5.25; 2, 4.25; 3, 3.50 each.....dis 25 %

Augurs & Bitts.—Snell's Auger.....dis 40&10 %
L'Hommedieu's Ship Auger.....dis 15 %
Jenning's Bitts.....dis 10&10&10 %
Cook's Bitts.....dis 40&10 %
Shepardson's Double-Cut Bitts.....dis 45 %
Shepardson's Double Gimlets.....dis 40 %
Stearn's Extension Hollow Augers—
No. 2, ₱ doz., $48.00; No. 3, ₱ doz., $60.00 list..dis 20 %
Bonney's Extension Hollow Augers.....₱ doz $36.00
Pierce's Bitts.....dis 40 %
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Axes.—Blue Jackets.....₱ doz $9.00
Red Cross.....₱ doz 8.00
Red Cross Handled.....₱ doz 12.00
Dowse Handled Boys'.....dis 33⅓ %

Ax Handles.—
Oak Extra, 31 in., No. A.....₱ doz $2.15
Oak Extra, 34 in., No. A.....₱ doz 2.35
Oak Extra, 31 in., No. B.....₱ doz 1.75
Oak Extra, 34 in., No. B.....₱ doz 2.00
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Axle Clips.....dis 50 %
Balances.—Chatillon's.....dis 15&10 %

Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers).....₱ ft. 20
Cast Half Round.....₱ ft., ⅝, 30; ¾, 40
Wrought Round.....₱ ft., ⅝, 30; ⅞, 40; 1, 50

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Japanned M. B. & D., reduced list, 1879.....dis 40 %
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Blind Fasts.—Lock Fasts.....₱ C sets $6.00
No. 6 Fasts.....₱ C sets 6.00
Veazie Fasts.....₱ C sets 6.00
Shedd's.....₱ C sets 7.00
Blind Hinges.—Mall, Hook, 3 holes.....₱ C sets 7.00

Brad Awl Handles.—
Phœnix Adjustable.....₱ doz $2.00

Bolts.—Norway Iron Carriage.....dis 70&10 %
Common Iron Carriage.....dis 80&25 %

Borax.—Refined.....₱ ℔ 13½c

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Eagle Upright each.....$5.50 list } dis 40&10 %
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Demas Lathe and Scroll Saw.....each 6.50
Bracket Saws, extra quality, to No. 5.....₱ gro 0.75
Steel Frame, with patterns.....₱ doz 6.50
Lester.....dis 20 %
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Bracket Saw Blades.—Griffith's pat.....₱ gross 75c

Brackets.—
H. B. & M. Flower Pot, reduced list.....dis 30&10 %
Bronzed Shelf, M. B. & D., new list.....dis 40 %
Store Shelf.....dis 40 %

Butts.—Union Fast Joint.....40&10&10 %
Union Loose Joint.....dis 45&10&10 %
Union Japanned Acorn.....dis 50&10 &10 %
Union Silvered Acorn.....dis 50&10&10 %
Union Boston Finish.....dis 70&10 %
Union Spiral Spring.....dis 25&10 %
Wrought Brass.....dis 60& 10%

Carriage Bolts.—Eagle Norway.....dis 70&10 %
Common.....dis 80 & 5 %

Carriage Jacks.—Climax No. 1.....₱ doz $20.00
Climax No. 1½.....₱ doz 15.00
Climax No 2.....₱ doz 13.50
Universal.....dis 25 %
Universal No. 1.....each, $2.00
Universal No. 2.....each 3.00
Universal No. 3.....each 5.00
Universal No. 4.....each 6.00
Universal No. 5.....each 6.50

Cartridges.—U. S. Cartridge Co.....dis 70 %

Cards.—
Watson's make Horse & Curry....dis 10 % } New List,
Watson's Cotton.....dis 10 % } July, 1881.
Watson's Wool.....dis 10 % }

Casters.—Bed and Table.....dis 45 %

Chain.—Traces 6¼, 10, 4, straight.....₱ pair 50c
Traces 6¼, 10, 4, twisted.....₱ pair 55c
Traces 7, 12, 2, twisted.....₱ pair 80c
Coil ¼.....₱ ℔ 10
Coil ¼.....₱ ℔ 9½c
Coil 5-16.....₱ ℔ 8c
Coil ⅜.....₱ ℔ 6¾c
Coil 7-16.....₱ ℔ 6¾c
Coil ½.....₱ ℔ 6c

Chalk.—White, Carpenter's.....₱ gross 60c
Red, Carpenter's.....₱ gross 80c
Blue, Carpenter's.....₱ gross $1.00

Chisels.—Hart, Bliven & Mead, Framing..dis 60&10&10%
Underhill, Framing.....dis 25 %
Buck's Chisels.....dis 30 %

Clothes Line.—
Galvanized Wire, 100 feet each.....₱ doz $4.00

Coal Hods.—"Dover."—Galvanized, New List.dis 40%
Japanned, new list.....dis 40 %

Coffee Mills.—New List.....dis 33⅓&10 %

Copper Rivets.....dis 33⅓ %

Cow Ties......dis 33⅓ %
No. 30, 3 ft. No. 6 Wire, with toggle.....₱ doz $3.80
No. 35, 3 ft. No. 6 Wire, with snap.....₱ doz 4.00
No. 40, 3½ feet No. 6 Wire, with toggle.....₱ doz 4.30
No. 45, 3½ ft. No. 6 Wire, with snap.....₱ doz 4.40
No. 50, 4 ft. No. 4 Wire, with toggle.....₱ doz 4.75
No. 55, 4 ft. No. 4 Wire, with snap.....₱ doz 5.00
No. 60, 4½ ft. No. 3 Wire, with toggle.....₱ doz 5.60
No. 65, 4½ ft. No. 3 Wire, with snap.....₱ doz 5.80

Cocks.—Brass, L. F. & Co.....dis 40 %

Cordage.—Manila, usual trade dis 2c.....₱ ℔ 14c
Jute.....₱ ℔ 9c

Crow-Bars.—Cast Steel.....₱ ℔ 7½c
Iron, steel-pointed.....₱ ℔ 6c

Cutlery.—Pocket, American Shear Co.'s.....dis 40 %
Butcher Knives, Wood's, Lap Bolster, Square Handle.....dis 30 %
Steak Knives.....dis 25 %
Lap Bolster, Oval Handle.....dis 20 %
Sticking.....dis 20 %
Skinning.....dis 30 %
Butcher, Common Round Handle, Wood's.....dis 20 %
Shoe Knives, Wood's.....dis 20 %

Dividers.—Cook's.....dis 25 %
Dog Collars......dis 20 %
Dog Muzzles.—Automatic.....dis 15 %

Door Springs.—Torrey's Rod.....₱ doz $1.62
Imitation Torrey's Rod.....₱ doz 1.45
Gem Coil, new list.....dis 40 %
Crown.....₱ doz 1.25
Warner's.....₱ doz 2.00

Door Stops.—Thurston's.....dis 50 %
Drawer Knobs.—Thurston's.....dis 50 %

Drills.—Morse Bitt Stock.....dis 25 %
Morse Straight Shank.....dis 20 %

Emery.—Wellington Mills.....₱ ℔ 12c
Walpole Emery Mills.....₱ ℔ 8c
Turkish in 10 ℔ cans.....₱ ℔ 8c

Enameled Ware.—
Standard Mfg. Co. Kettles.....dis 30 & 10 %
Standard Sauce Pans.....dis 25 %

Felloe Plates.—Wrought.....₱ ℔

Files.—American File Co.....dis 40 %
Nicholson File Co.....dis 40 %

Fluting Machines.—Knox list, $4.00.....dis 20 %
American list, $3.40.....dis 20 %

Forks.—W. C. & Co., Manure.....dis 50 %

Gimlet Bits.—
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's.....per doz .88

Glass Cutters.—Combination Glass Cutter and Knife Sharpener.....₱ doz $1.00

Grub Hoes.—K. P. & Co.'s No. 2, $11.50 ₱ doz.dis 30 %

Hammers.—Maydole's.....dis 15 %
Hartford Hammer Co.....dis 20 %

Hangers & Rollers.—Anti-Friction.....dis 50 %
Acme Rollers.....dis 50 %
Climax.....dis 50 %
Common Hangers.....dis 50 %
Common Rollers.....dis 50 %

Hand Screws......dis 10 %

Hatchets.—C. F. Dowse new list.....dis 33⅓ %
Underhill.....dis 25 %

Hay Knives.—Lightning.....₱ doz. $18.00, net
Fisher's Patent.....₱ doz $14.00

Hinges.—Strap and T (new list).....dis 40&10 x 10 %
Providence Plate.....₱ ℔ 5½ %
Wrought Screw Hook.....₱ ℔ 6½ %

Hoes.—W. C. & Co.'s.....dis 50 %

Hooks and Staples.—Brewers' (new list).....dis 60 %

Horse Nails......No. 6 7 8 9
National Finished.....23 .21 .20 .19.....dis 20 %
Putnam Pointed.....28 .26 .24 .22.....20 %

Horse Nails.—Bridgewater.....dis 25 %
No. 6, 23; No. 7, 21; No. 8, 20; No. 9, 19.

Ice Cream Freezers.—Packer's, new list.....dis 40 %

Knobs.—"Norwalk." New list.....dis 45 %
Silver Glass.....dis 50&10 %
Silver Glass Bell Pulls.....dis 50&10 %

Lanterns.—Guarded, No. 99.....₱ doz $7.50
Tubulars, No. 0.....₱ doz 8.00
Railroad, Oil, No. 43.....₱ doz 9.00
Triangular.....₱ doz 4.00
Hurricane.....dis 20 %

Lawn Mowers.—The "Daisy."
12 in. cut.....each, $8.00
14 in. cut.....each 8.40
16 in. cut.....each, 9.00
18 in. cut.....each, 9.50

Lead.—Sheet.....₱ ℔ 8 c
Pipe.....₱ ℔ 7½c

Locks.—Norwalk.....dis 45 %
Eagle Cabinet.....dis 25 %
Eagle Trunk.....dis 15 %
W. Wilcox & Co., Padlocks.....dis 35 %

Manure Forks.—W. C. & Co.....dis 40 %

Mattocks.—
K. P. & Co., Long Cutter, $16.00 ₱ doz.....dis 30 %
K. P. & Co., Short Cutter, $15.50 ₱ doz.....dis 30 %
K. P. & Co., Pick Cutter, $16.00 ₱ doz.....dis 30 %

Measuring Tapes.—Eddy's.....dis 20 %

Meat Cutters.—Miles' Challenge.....dis 30 %
Hale's, (new list).....dis 40 & 10 %
American.....dis 25 %

Money Drawers.—Tuckerlar's Am.....₱ doz $22.50

Mouse Traps.—Delusion.....₱ doz 2.00
Novelty.....₱ doz .75

Nails......₱ keg, 3 50

Oilers.—Zinc and Tin.....dis 40 %
Brass and Copper.....dis 40

Ox Bows.—Extra finished and varnished.....dis 10 %
1¼ in., ₱ doz. pair...$7.00 | 2 in., ₱ doz. pair. $10.00
1⅝ in., ₱ doz. pair. 9.00 | 2½ in., ₱ doz. pair. 12.00

Paper.—Tarred Sheathing.....₱ ℔ 2½c
Tarred Eagle Brand.....₱ ℔ 2½c

Picks.—K. P. & Co., Adze Eye, 5 to 6 ℔ $12.50...dis 30 %
K. P. & Co., Adze Eye, 6 to 7 ℔ $13.00.....dis 30 %

Planes.—
Fancy Planes.....dis 15 %
Razee Planes.....dis 20 %
N. Y. Tool Co.....dis 25 %
English Iron.....dis 20 %
Bailey's.....dis 20&10 %

Plated Ware.—Rogers & Bro.....dis 40&5 %

Pliers.—Vom Cleff & Co.'s.....net list
Button's Wire Pliers.....dis 33⅓ %

Plumb & Levels.—Stanley R. & L. Co.'s.....dis 40&10 %

Pocket Knives.—American Shear Co.'s.....dis 40 %

Potato Diggers.—W. C. & Co., reduced list..dis 30 %

Pulleys.—Acme or Excelsior, 1¼ in.....₱ doz 24c
Acme or Excelsior, 2 in.....₱ doz 27c

Pulley Blocks.....dis 35 %

Pumps.—Union Manufacturing Co.
Iron Cistern.....dis 45 %
Iron Pitcher Spout.....dis 40 %
Copper.....dis 30 %

Rivets.—Black (new list).....dis 40 %
Carriage in 10 ℔ papers (new list).....dis 40 %
Copper.....dis 33⅓ %

Razors.—Torrey's.....dis 30 %
Razor Strops.—Torrey's.....Full line
Rules.—Stanley, Boxwood.....dis 66⅔&10 %
Stanley, Ivory.....dis 55&10 %

Sad Irons.—Common.....₱ ℔ 3½c
Laundry.....₱ ℔ 6½c
Tailors' Geese.....₱ ℔ 6 c
Enterprise, "Pettit".....dis 40%

Sash Locks.—King & Hutchinson's, new list..dis 40 %

Sandpaper.—Baeder & Adamson.....dis 30 %
M. B. & D.....dis 25&5 %

Sash Weights.—Patent Eye.....₱ ℔ 1½c

Saws.—Hand Saws, Disston's.....dis 20 %
Wheeler & Clemson.....dis 20 %
Cross-Cut Saws.
W. M. & Co., Common Tooth, No. 1.....₱ foot 33c
W. M. & Co., Champion Tooth.....₱ foot 35c
Disston's, Common Tooth.....₱ foot 66c dis 40 %
Disston's Great American Tooth...₱ foot 66c dis 40 %
Boynton's Light ing Tooth.....₱ foot 45c
M. B. & D., Hand Saws.....dis 33⅓ %
W. M. & Co.'s Circular Saws.....dis 35 %
Richardson Bros.....dis 25 %

Saw Blades.—Disston.....dis 20 %
W. M. & C.....dis 10 %
Welch & Griffith, Extra.....₱ doz $8.40
Welch & Griffith, No. 2.....₱ doz 7.00

Scales.—Fairbank.....dis 30 %

Screws.—Aiken's Flat-Head Iron.....new list, dis 30 %
American Flat-Head Iron.....new list, dis 30 %
American Flat-Head Brass.....new list, dis 30 %
American Round-Head Brass.....new list, dis 30 %
American Round-Head Iron.....new list, dis 25 %
Grilley Round Head Nickel-Plated. Common..dis 40 %

Scythes.—Clippers, in boxes.....₱ doz $9.00

Shavers.—Kimball's.....₱ inch 7½c
Watrous.....dis 15 %

Shears.—American shear Co., new list.....dis 70 %

Shot.—Tatham's.....₱ ℔ 7c

Shovels.—O. Ames, new list.....dis 15 %
O. Ames, other brands, new list.....dis 15 %
M. B. & D.....dis 15 %
Oxford, Birmingham Pattern.....dis 40 %

Sinks.—Magee Patent.....dis 30 %

Snow Shovels.—Malleable Tips.....$3.00

Skates.—Union.....dis 25 %
Acme.....dis 20 %
Imperial Club list No. 5, $3.75 ₱ pair; list No. 7, $5.00 ₱ pair.....dis 25

Stocks and Dies.—King's.....dis 10&5

Tacks.—A. Field & Son's.....dis 30&10 %
Pittsfield.....dis 30&10 %
Swedes Tinned.....dis 25&10 %
Swedes Iron.....dis 30&10 %
Gimp and Lace.....dis 30&10 %
Copper Tacks.....dis 30&10 %
All balances on list.....dis 25&10 %

Traps.—Oneida, Genuine.....dis 33⅓ %
Oneida, Imitation, H. & N.....dis 50 %
Blake's.....dis 40&10 %

Vises.—Simpson's Adjustable.....dis 25&5 %
Howard Vise Co.....dis 25 %
'Prentiss'.....dis 20 %

Weather Strips.—Packer's.....₱ doz $4.50
Browne's Flexible Rubber.....dis 30 %
In 25 feet boxes: No. 1, ¼ in. wide, ₱ yard. 10c.; No. 2, ⅜ in., 14c.; No. 3, ½ in., 20c.; No. 4, 1 in.....24c
Black Walnut Spring Weather Strips.....₱ doz $3.40

Window Springs.....d's 20 %
Babcock's No. 3.....₱ gross $6.25
Babcock's No. 4.....₱ gross 4.15

Wire Cloth.—"Clinton".....₱ ft 3.0c

Wire Fence.—Scutt's Patent, Painted.....₱ ℔ 8½c
Scutt's Patent, Galvanized.....₱ ℔ 9½c

Wire Goods.—Gate Hooks and Eyes, &c., new list.....dis 15&10 %

Wrenches.—A. G. Coe's.....dis 40&10 %
Girard Mfg. Co.....dis 50 %
Girard Agl.....dis 60 %

Wringers.—
Novelty, No. 2.....₱ doz 30.00
Excelsior, No A.....₱ doz 57.00
Excelsior, No B.....₱ doz 51.50
Excelsior, No CC.....₱ doz 78.00
Novelty Set Tub, E.....₱ doz 48.00
Keystone, Wood Frame No 1½.....₱ doz 36.00
Keystone, Iron Frame No 2½.....₱ doz 31.00
Zinc.....₱ ℔ 8c

Withington, Cooley & Co.—Hoes, Rakes, Forks, &c. dis 40. Special rates for expot.

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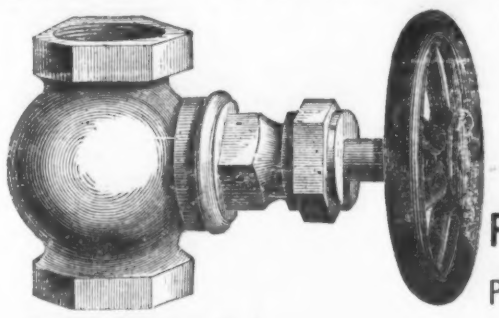

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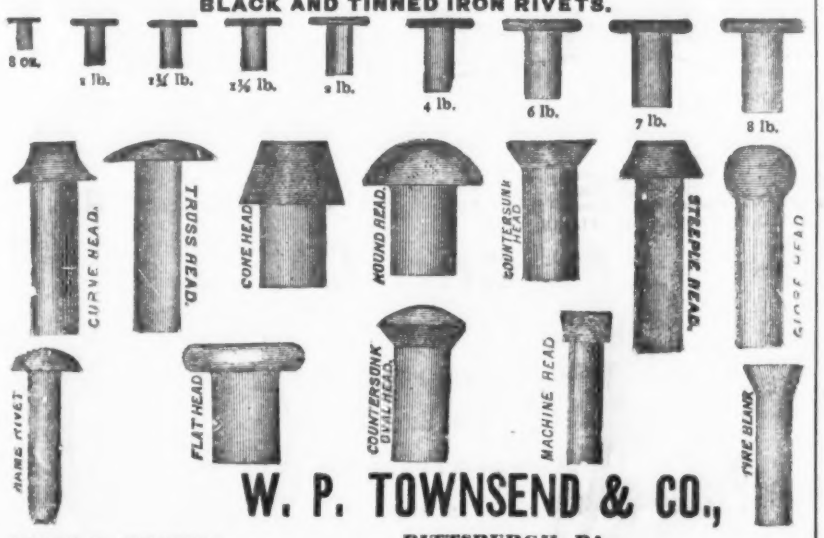

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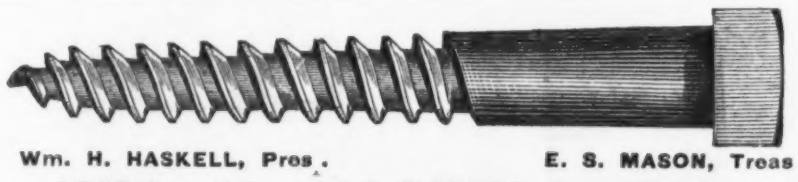

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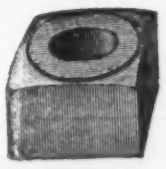

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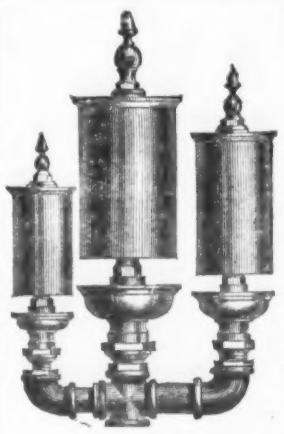

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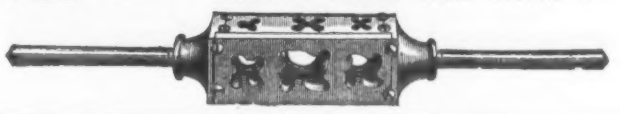

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WEYMOUTH'S PATENT.

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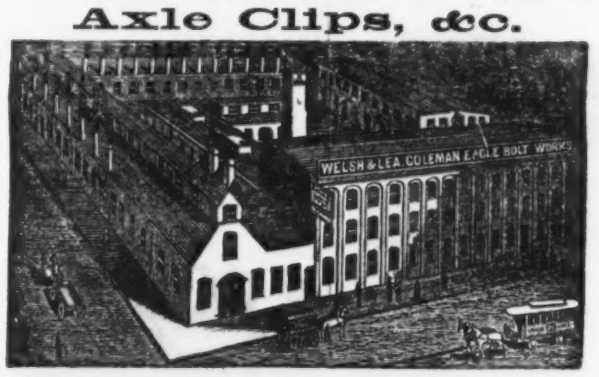

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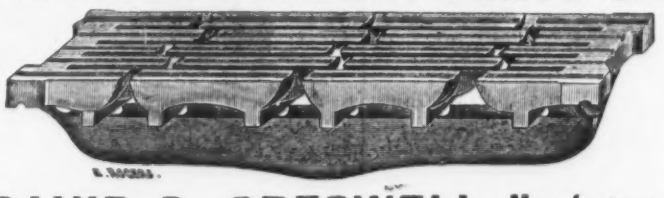

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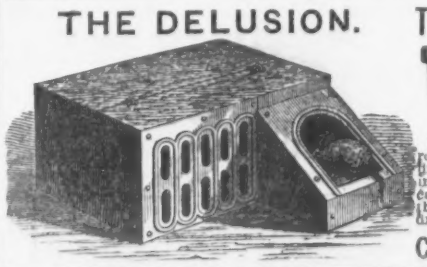

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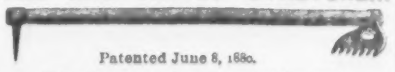

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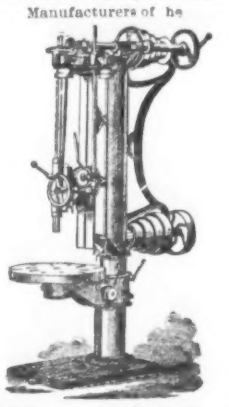

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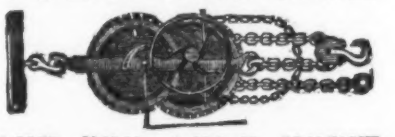

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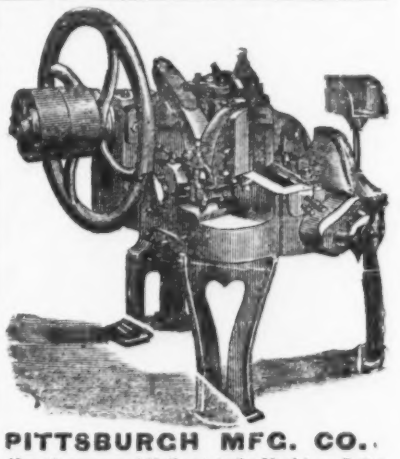

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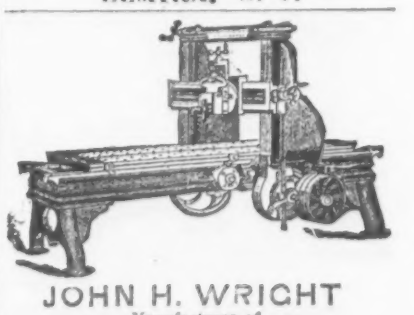

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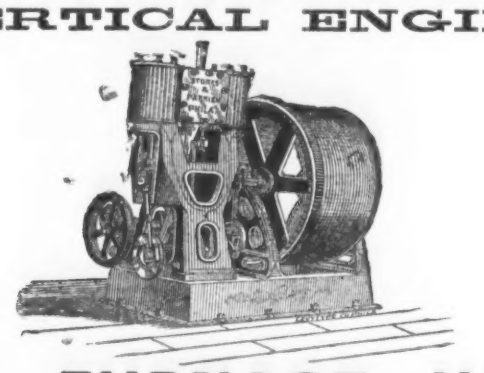

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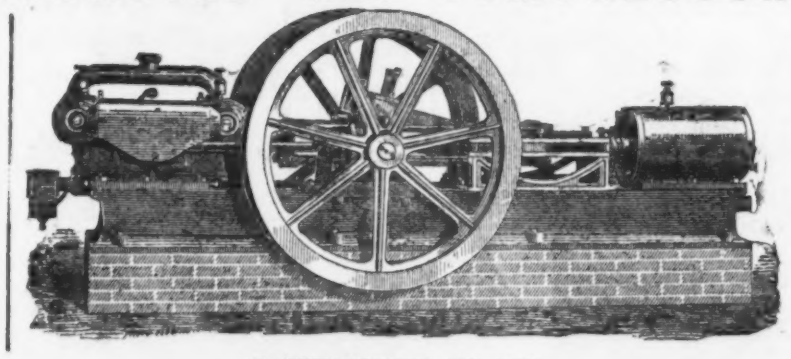

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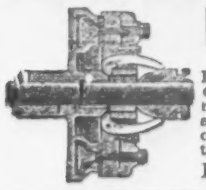

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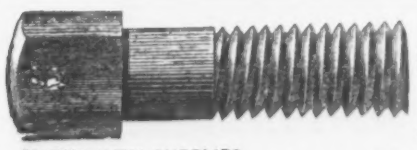

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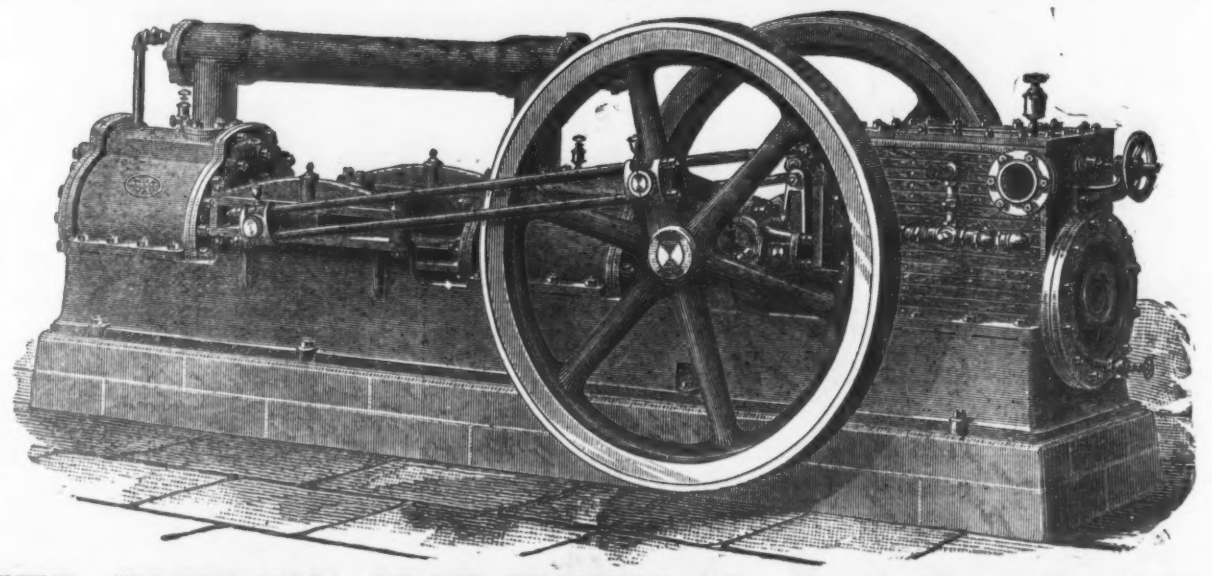

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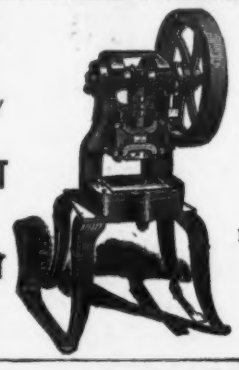

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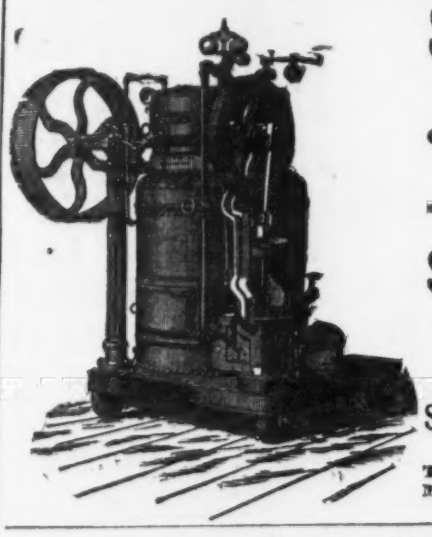

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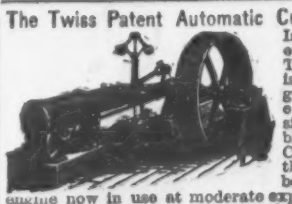

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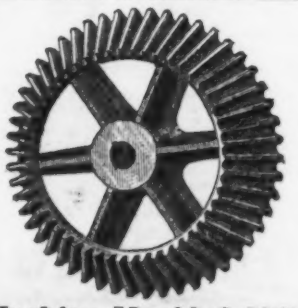

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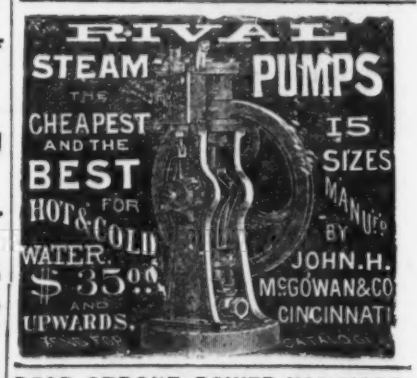

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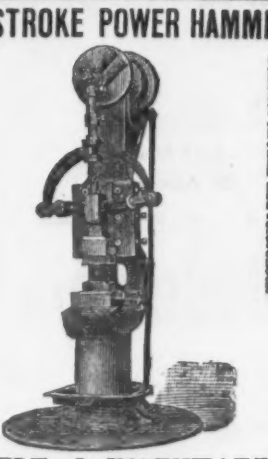

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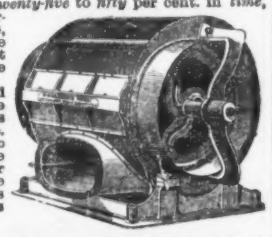

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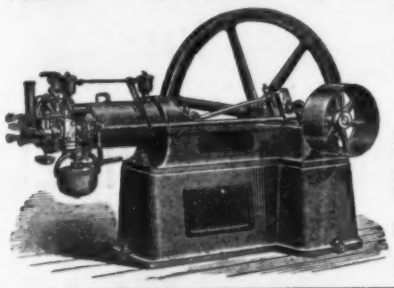

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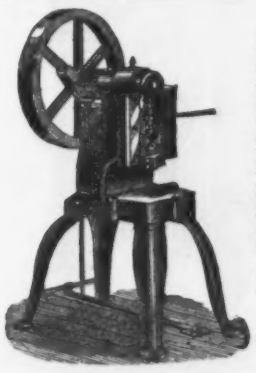

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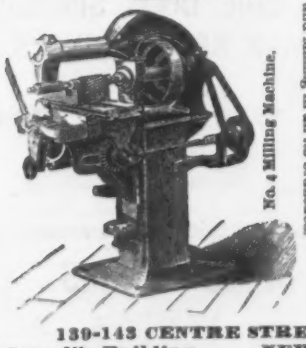

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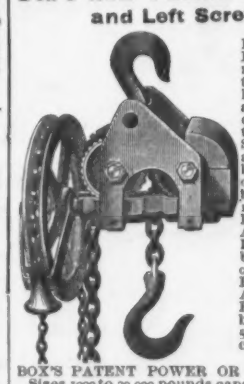

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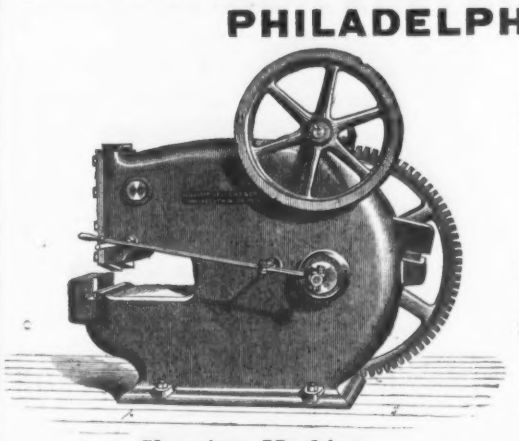

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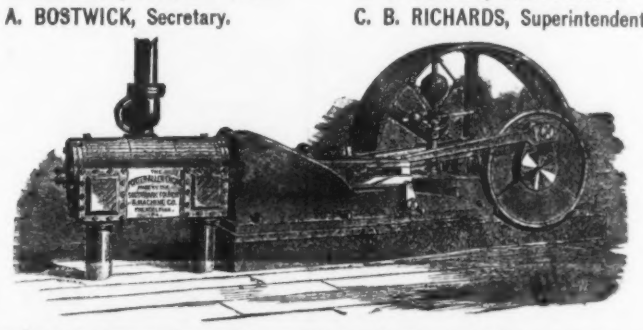

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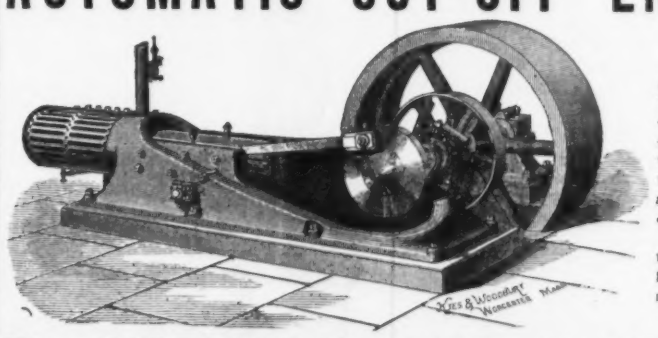

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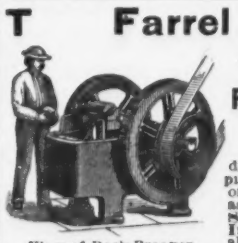

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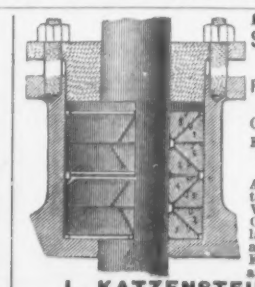

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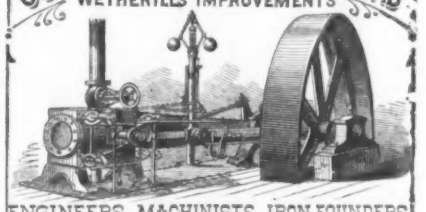

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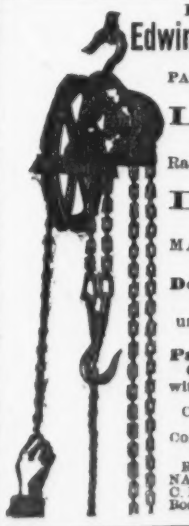

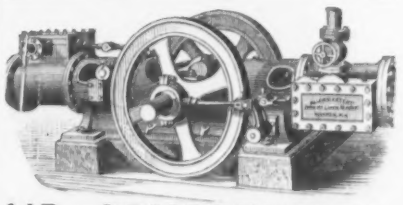

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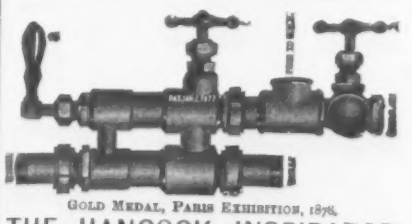

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